Dental Digest

November 1949

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About Our CONTRIBUTORS

NORMAN I. GOLDBERG, D.D.S. (Temple University, School of Dentistry, 1943) and his collaborator, AARON GERSHKOFF, B.S. (Providence College, 1936), D.D.S. (Temple University, School of Dentistry, 1941) are members of the American Dental Association, the Rhode Island Dental Society, the Providence District Dental Society, the Northeastern Dental Society, and the New England Dental Society. Doctor Goldberg and Doctor Gershkoff have been experimenting for some time with a procedure for full lower denture construction which is a departure from the conventional methods. In this month's DIGEST Doctor Goldberg and Doctor Gershkoff present their article, THE IMPLANT DENTURE, which is a description of the procedure involved and includes several case histories.

N. HENRY LARSON, D.D.S. (New York University, College of Dentistry, 1915) emphasizes restorative dentistry in his practice. This month Doctor Larson presents the second installment of his article, THE EFFICIENT USE OF CARBIDE BURS AND DIAMOND POINTS FOR CAVITY PREPARATIONS. Part One appeared in the October issue of DIGEST.

JOSEPH E. SCHAEFER, D.D.S. (Chicago College of Dental Surgery, Loyola University, 1907); LL.B. (Kent College of Law, Chicago, 1913); B.S. (Lewis Institute, Chicago, 1919); M.D. (University of Chicago, 1923) is a member of the American Dental Association, the American Board of Oral Surgery, and the Chicago Society of Oral Surgeons. Doctor Schaefer and his collaborator, Ralph C. Rudder, D.D.S. (Chicago College of Dental Surgery, 1928), M.D. (Chicago Medical School, 1942) present in the current issue of DIGEST the second in a series of case histories drawn from their own experience, CORRECTION OF MAXILLARY RETRUSION.

LEONARD FRANK is well known to DIGEST readers for his many articles on roentgenology. His present article, FRONTAL EXAMINATION OF THE CONDYLE, is the third in a series of definitive studies of the movements of the condyle.

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The Implant LOWER DENTURE

NORMAN I. GOLDBERG, D.D.S.
and AARON GERSHKOFF, B.S., D.D.S., Providence, R.I.

DIGEST

The authors of this article are utilizing the accumulated knowledge of implant technique, which has been applied successfully for some time in various parts of the body, as a basis for their technique on implant lower dentures. The result is a revolutionary idea in prosthetic dentistry.

Peripheral seal, muscle trimming, patient perseverance, and adaptability are no longer concerns in successful lower denture construction because the denture is not tissue borne. The technique is not radical. (1) Sound dentistry, (2) sound principles of physics, and (3) simplicity of manipulation and insertion have been incorporated to accomplish the hoped-for results in these lower dentures.

This technique is at present directed primarily to two types of patients: 1. Those who have difficulty tolerating conventional full lower dentures. 2. Patients with certain characteristics of mandibular anatomy which make it impossible to construct conventional dentures successfully, such as: (1) torus mandibularis, (2) high muscle attachments, (3) sharp spiny ridges, and (4) flabby tissue.

Although the number of patients has been limited and to date the longest history to be observed is of thirteen months' duration, the results of this technique have been so satisfactory that the authors believe it suitable to report at this time to the dental profession.

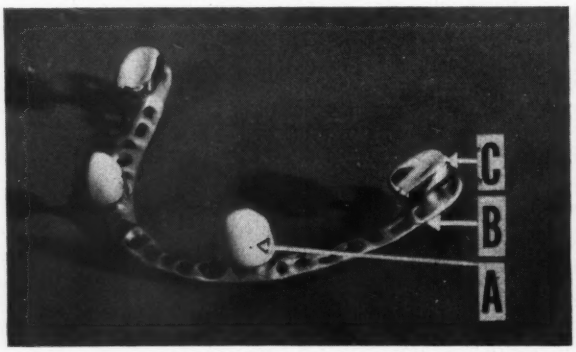
Tissue Borne Dentures

Dentures of today are constructed basically the same as they were at the time of George Washington; that is, the dentures are tissue borne. As an outcome of continued research, however, techniques and materials have been vastly improved so that at the present time patients wearing dentures are relatively comfortable and have the satisfaction of proper esthetics.

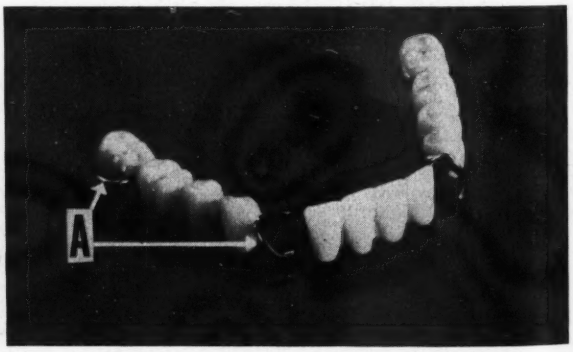
The goal still to be reached, however, is perfection in the following respects: (1) retention, (2) stabilization, and (3) function. With the exception of bulk, these requirements can be accomplished in conventional dentures with most patients; but bulk is still present. Intensive research was undertaken with the aim of eliminating bulk with the result that dentures can now be made which are comparable to the natural dentition. Retention, stability, function, and esthetics are achieved with a minimum or no amount of bulk.

Basic Principles

Many surgeons applying vitallium implants throughout the body established the basic principles of implant technique. REPLACEMENT OF THE BODY OF THE MANDIBLE WITH AN IMPLANT quoted from *American Journal of Surgery*, September 1945, reported by Winter, Lifton, and



1. *The implant or fixed part. (a) Anterior abutment. (b) Meshwork. (c) Posterior abutment.*



2. *The superstructure or removable part of the implant denture. (a) Clasps.*

McQuillan[1] contributed strongly to the conviction that implant procedures could be utilized for the retention of full lower dentures.

Description of the Implant Denture

The implant denture is divided into two parts, (1) the implant or fixed part (Fig. 1), and (2) the superstructure or removable part (Fig. 2).

1. The implant section is designed of a fine meshwork (Fig. 1a) to conform to the curvatures of the mandible and is securely fastened to it by means of vitallium screws (Fig. 3a). The metallic implant becomes a permanent part of the mandible and is covered by the mucoperiosteum.

2. Anterior and posterior abutments (Fig. 1b and 1c) extend from the implant and are constructed to receive and retain the removable or superstructure, consisting of teeth.

3. The teeth are set into vitallium backings and incorporated with clasps into a one-piece casting (Fig. 2a) for retention on the abutments. This becomes identical to a removable partial denture except that it does not rest on tissue (Fig. 4).

Advantages of the Implant Denture

1. Changes of the mouth caused by absorption of bone and tissue have no effect on the fit of the implant denture.

2. Base denture material has been eliminated completely; therefore bulk is no longer present (Fig. 10).

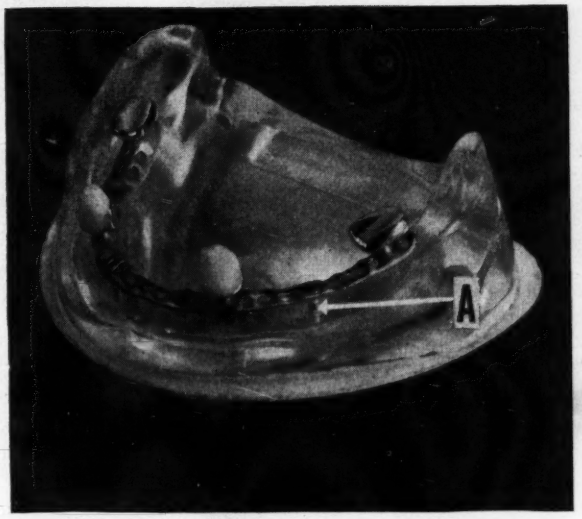
3. Patients become mentally at ease knowing that lower dentures fit securely and comfortably.

4. Embarrassing situations from "floating lowers" cannot arise. Dentists can assure patients of lower dentures that fit and do not move.

Procedure

Impression Technique—The impression technique, bite, set-up of teeth and try-in for the implant denture is similar to any method that the dentist is accustomed to using for conventional dentures. The following steps may be taken:

[1]Winter, Leo; Lifton, Jacob C.; and McQuillan, Arthur S.: Replacement of the Body of the Mandible, American Journal of Surgery 69: 318-324 (September) 1945.



3. *Implant fastened to model of mandible. (a) Vitallium screws.*

4. *Superstructure and removable part clasped to implant. Note space between pontics and implant allowing mucoperiosteum to cover implant.*

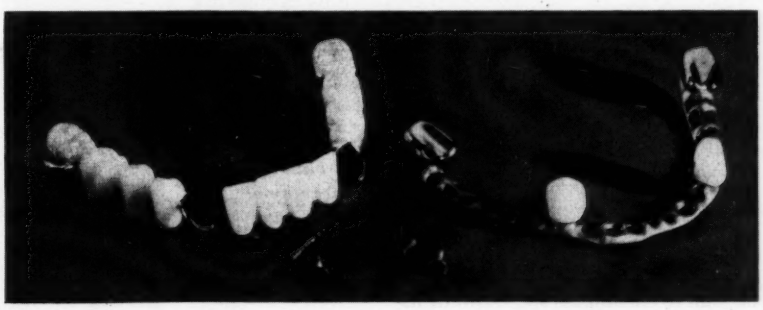
1. Obtain upper and lower impressions and intraoral x-ray pictures of the mandible. In the lower impression, peripheral seal and muscle trimming are not factors of concern.

2. After the bite is taken, determine the mold and shade of the teeth.

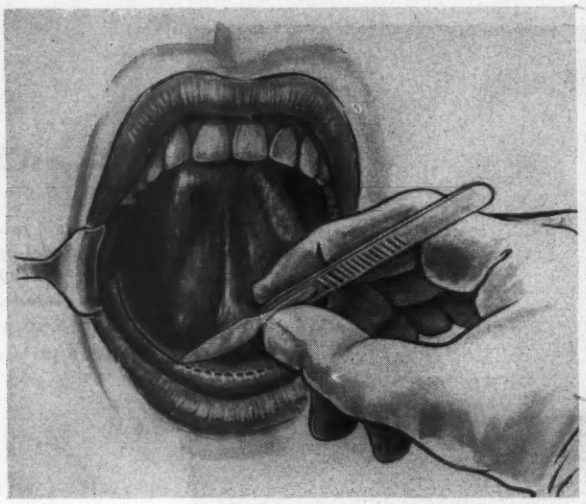
3. Set up for try-in.

Implant Technique—At this point the procedure differs from the construction of conventional full lower dentures:

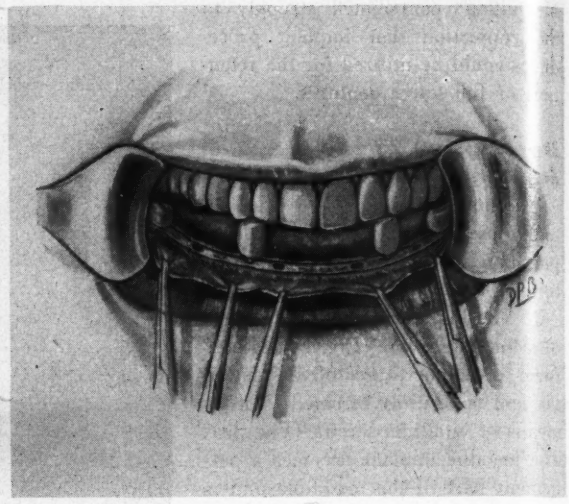
1. Determine the thickness of the tissue overlying the ridge of the mandible. (This is done by means of x-ray and a special appliance.)



5. *Implant, superstructure, and screws.*



6. ***Beginning of incision.***



7. ***Checking occlusion of implant abutments to full upper denture prior to insertion of screws.***

2. The model should be prepared so that the casting of the implant conforms to the *bone*, and *not* to the overlying mucosa.

3. Processing of the full upper denture and casting of the implant and implant denture framework are done simultaneously by the laboratory.

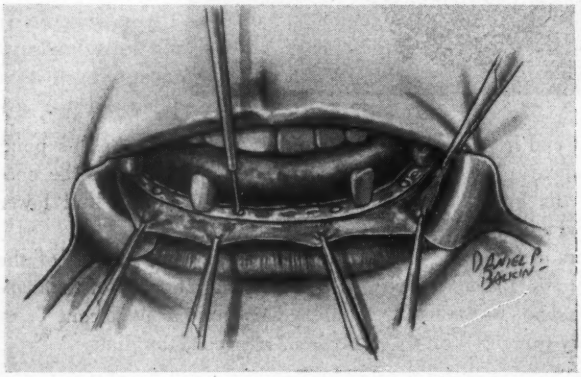
4. The implant is now set on the bone, underneath the mucoperiosteum, and the full denture is inserted.

5. The patient is instructed to close in centric to check the occlusion of the abutments (Fig. 7).

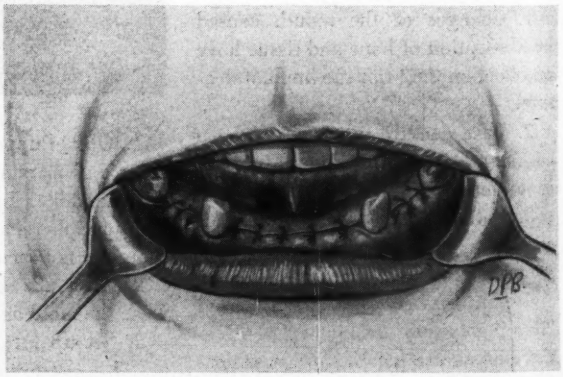
6. The upper denture is then removed. Holding the implant firmly in position, starting holes are made in the bone for the insertion of the screws. The screws are inserted to secure the implant permanently to the bone (Fig. 8).

7. The mucoperiosteum is carefully sutured over the implant (Fig. 9).

8. The impression and bite are now taken, in soft wax, with the implant denture framework, so that teeth can be butted and processed for the final insertion of the finished denture.



8. ***Insertion of screws.***



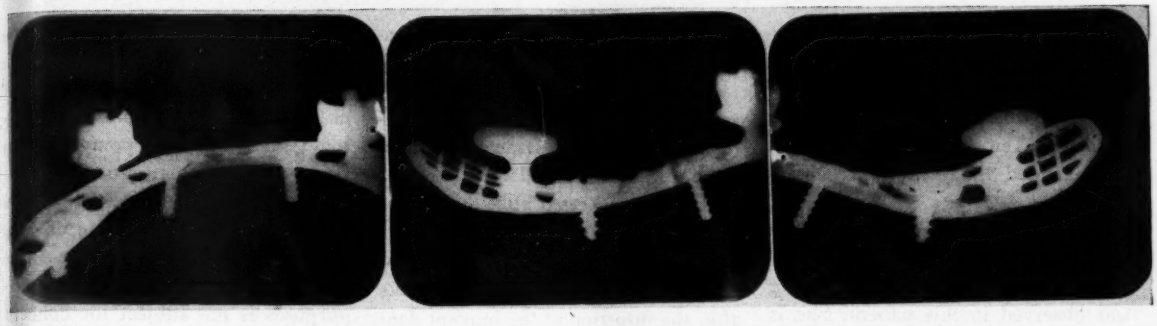
9. ***Suturing completed.***

Insertion of Implant—1. The patient is given a double mandibular nerve block and at the same time a long buccal nerve infiltration.

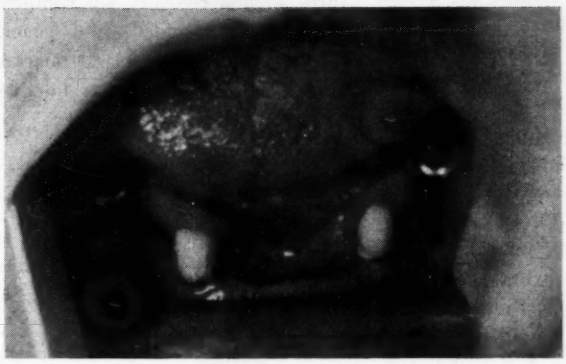
2. An incision, no longer than the distal ends of the implant, is made along the crest of the ridge through the mucoperiosteum (Fig. 6).

3. The tissue is retracted just enough to encompass the width of the implant.

10. ***Comparison of bulk between conventional full lower and implant denture.***



11. ***X-rays showing implant in situ after six months. No evidence of bone irritation.***



12. ***Result of a completed case showing abutments extending through perfectly healed mucosa.***

13. ***Completed case showing superstructure and implant denture in situ. Note how teeth are butted to gingival mucosa.***

14. ***Implant denture shown in occlusion with full upper denture.***

Typical Case Histories

Case One—The patient, a man of 45, married, and an electrician by trade, had been completely edentulous for eight years.

History—The oral tissue was poor in tone, of a purplish color, and flabby. Sharp spiny ridges were present, induced by ill-fitting dentures. Three sets of dentures had been made but the patient could tolerate none of them, as they could be kept in place only by the use of excessive amounts of adhesive powder.

Indication—An implant lower denture was indicated for this patient.

Procedure—1. The implant was inserted October 7, 1948 under aseptic conditions. 2. The patient was premedicated with 3 grains of nembutal. 3. Postmedication was APC with codeine.

Progress—Slight gingival swelling was present on the first postoperative day. There was no pain or tenderness on percussion of the abutments. All swelling disappeared and recovery was uneventful. Two weeks later (1) the denture was inserted and (2) occlusion was adjusted. At that time it was noted that the results obtained were highly satisfactory.

Continued Improvement—The patient was observed nine months later and conditions were found to be unchanged. The patient testified to a feeling of extreme naturalness and contentment.

Case Two

A woman aged 49, had been completely edentulous for 15 months. The oral tissue was firm with moderate ridges, and of good tone.

History—The patient was anemic. Typical menopausal symptoms were present. Two successful sets of dentures had not been tolerated by the patient.

Procedure—An implant for an implant denture was inserted May 23, 1949. Slight gingival swelling was noted on the first postoperative day. On the second day (1) all swelling was reduced, and (2) there was no pain or tenderness.

Progress—The sutures were removed five days after the implant procedure. The tissues were entirely closed at this time and in excellent condition. Ten days after the implant was inserted the denture was completed.

Improvement Noted—With the presence of secure lower teeth, complete restoration of mental well-being was observed in this patient. She is now able to eat anything she desires for the first time since losing her natural teeth.

Case Three

A man of 44, weighing 140 pounds, presented the following symptoms: (1) anemia, (2) underweight, (3) extreme nervousness, (4) peptic ulcers.

History—The maxilla and mandible were edentulous. Ridges and tissue tone were normal. The patient had had five sets of dentures constructed in seven years but could wear only the upper denture in all sets.

Proper handling of the patient by an experienced prosthodontist induced unusually sincere efforts to wear the lower dentures of the last two sets. However, the patient was unable to tolerate them.

Indication—An implant lower denture was indicated in this case.

Procedure—The implant was inserted in January, 1949. The postoperative period was routine and recovery was uneventful. The implant denture was inserted after the tissues were normal.

Improvement Noted—The patient gained five pounds within two weeks after the insertion of the implant dentures. Mental recovery was complete, nervousness subsided, and general physical improvement was marked. A full lower denture was tolerated for the first time in seven years.

Summary

In some of the earlier cases of implant denture procedure it was possible to observe what was taking place underneath and around the implant:

Subimplant Membrane—A definite tissue formation was noted between the mandibular bone and the implant. This tissue was grayish-pink in color and sensitive to probing. It completely covers the bone so that there is no direct contact of metal with bare bone. It takes two to three weeks for this tissue to grow. It then acts as a cushion between the implant and the bone, resembling in function, the *lamina dura*. This tissue is designated as the subimplant membrane. Histologic studies, not yet completed, are being made of this tissue.

Exfoliation of Screws—In a few cases the exfoliation of one or more screws has been noted. The maintenance of these screws for retentive purposes is not subject for concern. They serve as a primary retentive factor until tissue can proliferate through the meshwork of the implant, thereby providing physiologic as well as a mechanical hold. The proliferation of tissues through the meshwork of the implant is a slow process taking approximately six to eight weeks.

Conclusion

The evidence furnished by case histories is a sufficient basis for the conclusion that in the implant lower denture all the attributes of an ideal lower denture, (1) positive retention, (2) positive stability, (3) positive function, (4) esthetics, and (5) complete lack of bulk can be achieved (Fig. 10).

343 *Thayer Street.*

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The Efficient Use of CARBIDE BURS *and* DIAMOND POINTS *for Cavity Preparations*

Part Two

N. HENRY LARSON, D.D.S., New York

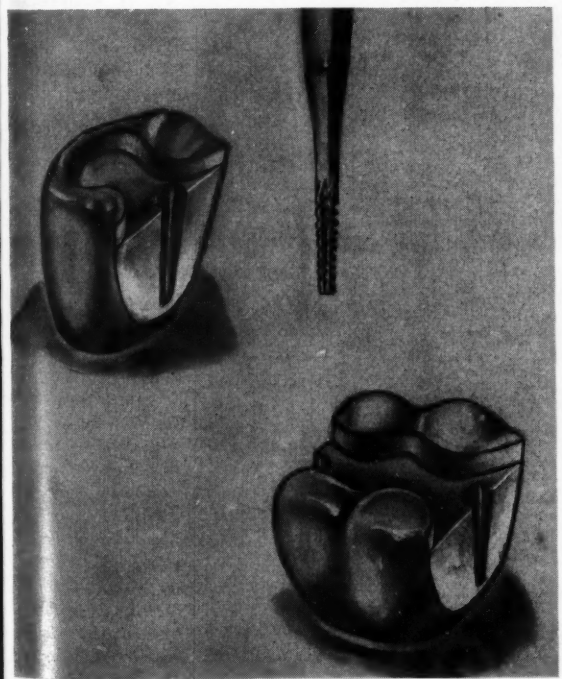
DIGEST

In Part Two of this article the author gives detailed directions for the use of carbide burs and diamond point instruments. A number of variations are included.

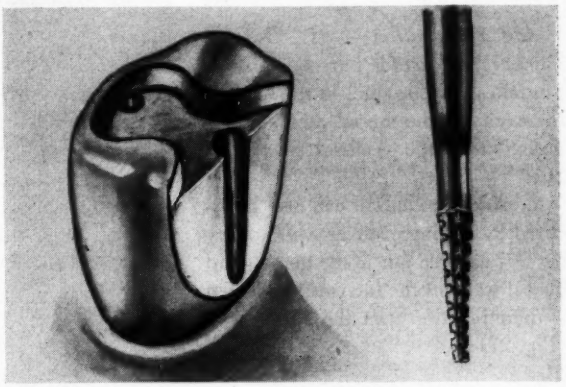
Variations in the Use of the Carbide Bur

In teeth which have but slight interproximal caries and in selected teeth of proper form which are to be used as abutments, the lock type of interproximal retention may be used.

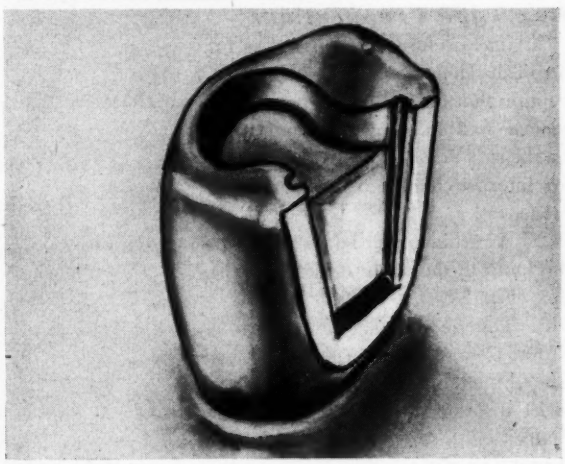
The Retentive Lock—By sinking a number 701 carbide bur to its full depth at the center of the slice the retentive lock is made. A slight movement of the bur in a mesial and distal direction creates a definite lock. For a bridge attachment this preparation should be used only on teeth of sufficient crown length. Retention is entirely predicated on the length of the lock groove (Fig. 25).



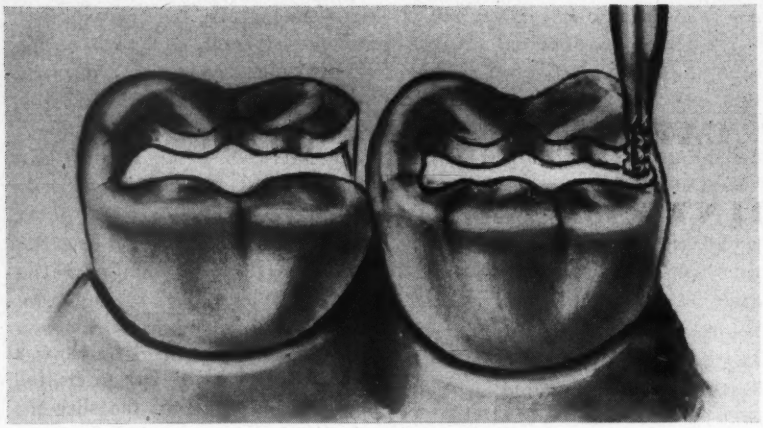
25. *Slice lock preparation. The retentive lock is made with a number 701 carbide bur. As a bridge abutment this type of preparation should only be used on teeth of good crown length.*



26. *A variation of a slice lock preparation. Added retention is secured by sinking a pin hole with a number 701 carbide bur into the floor of the cavity. Care must be taken not to involve the pulp.*



27. *A variation of a slice step preparation. Added retention is gained by cutting a groove into the dentine of the lingual and buccal side walls of the step. Care must be taken not to undermine the enamel.*



28. ***Box type, Black preparations. After the occlusal surface has been opened, a carbide taper bur is sunk into the interproximal junction of the dentine and enamel. Working from within, outward, the box is prepared roughly.***

Added Retention — 1. Using a number 701 carbide bur one or more pin holes may be sunk in the floor of the cavity at the mesial or distal termination of the occlusal step (Fig. 26).

2. Added retention can also be secured by cutting grooves with a number 701 carbide bur in the lingual and buccal walls of the interproximal step at their junction with the pulpal wall (Fig. 27).

Box Type Preparations

1. The occlusal is prepared as for an occlusal preparation with the exception that the occlusal groove is extended well into the marginal ridge on the side or sides of the tooth where an interproximal box step is to be made.

2. A carbide taper bur is sunk into the tooth to the depth desired for the box (Fig. 28).

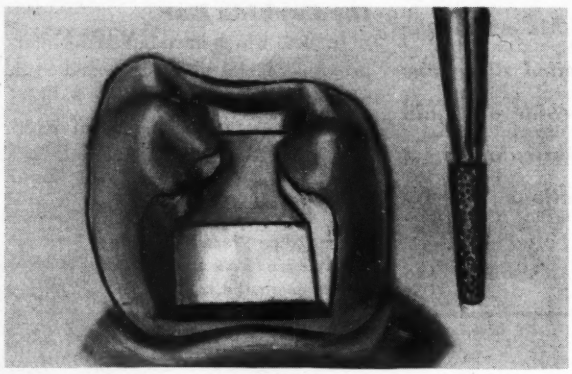
3. The bur is then moved from within toward the interproximal surface of the tooth, care being taken not to let a sudden break-through of the enamel allow the bur to touch the adjacent tooth.

(In using carbide burs, especially taper burs, it must be borne in mind that tungsten carbide is hard, but relatively brittle. Excessive pressure (limit, 2 pounds) cannot be used. Leverage should never be used. The keen cutting edges will cut rapidly when used at a high speed with light pressure.)

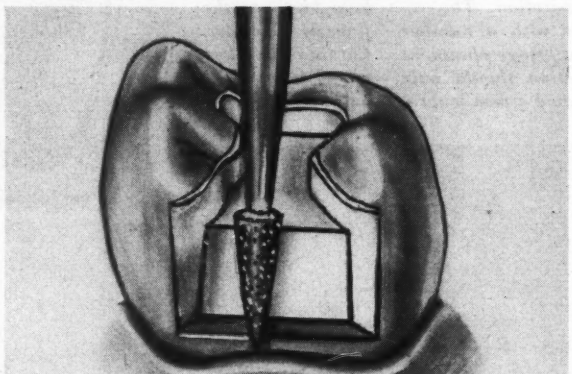
4. When sufficient space is obtained, a taper diamond point is used to complete the preparation of the step with slightly flaring walls (Fig. 29).

5. The gingival margin of the step floor is beveled with a flame diamond point (Fig. 30).

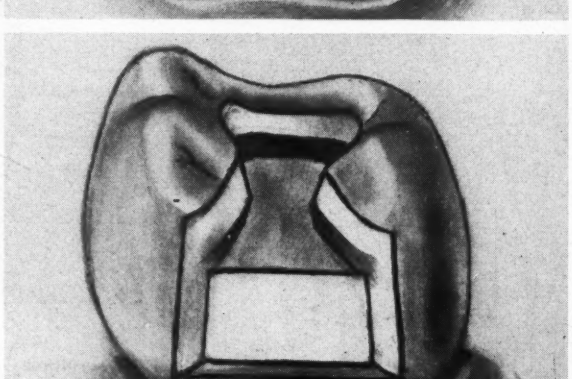
Amalgam Preparations—The only variation with amalgam preparations



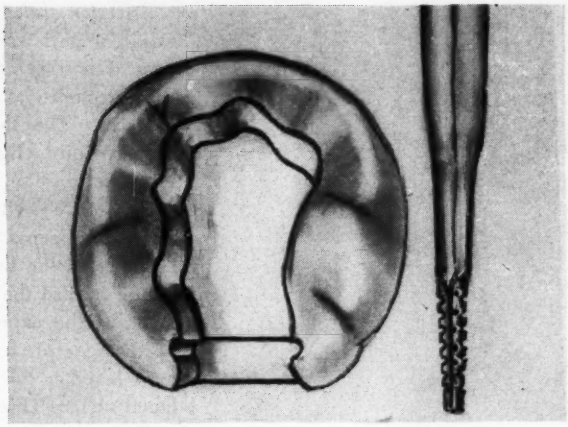
29. ***The box is completed with a taper diamond point.***



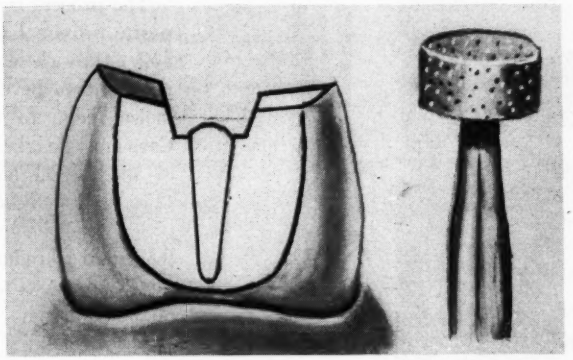
30. ***The gingival margin is beveled with a flame diamond point. The cavo-occlusal bevel, if desired, is made with a pyramid or a round diamond point.***



31. ***The compound amalgam preparation is started in the same manner as inlay preparations. Retention shape is obtained by using an inverted cone carbide bur or diamond point to form the occlusal side walls. The interproximal walls are flared slightly toward the gingival. No bevels.***



32. ***Added retention for acrylic inlays is obtained by grooving the lingual and buccal walls of the box with a number 701 taper bur.***



33. ***A preparation to accommodate excessive occlusal stress; also for changes in vertical dimensions. The cusps are beveled with a large wheel diamond point.***

is that, following the use of the wheel point, the occlusal is prepared with an inverted cone carbide bur or diamond point and the walls of the step are flared slightly toward the gingival. No marginal bevels are used (Fig. 31).

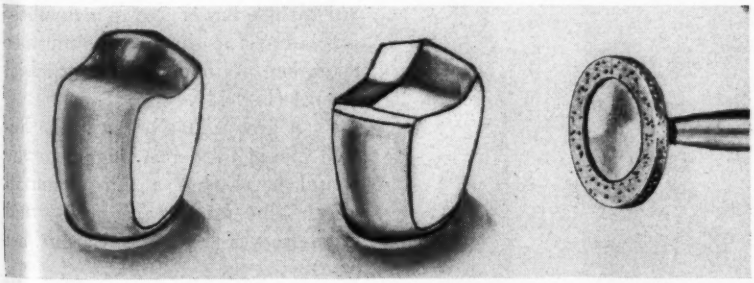
Acrylic Inlays—Additional depth is required for strength in acrylic inlays. Added retention may be gained by using a carbide taper number 701 bur to cut grooves in the lingual and buccal axial walls at their junction with the pulpal wall of the interproximal step (Fig. 32).

Complete Coverage—When occlusal stress or change in vertical dimensions indicate the need of complete coverage of the occlusal surface of the teeth, the cusps are beveled to the required form with a wheel diamond point (Fig. 33).

Three-quarter Veneer Preparations for Posterior Teeth

1. The interproximal surfaces are removed by discs as for inlay slices.

2. The occlusal is reduced with a large wheel diamond point (Fig. 34).



34. ***Three-quarter veneers for posterior teeth. After slicing the interproximal surfaces, a large wheel diamond point is used to reduce occlusal and lingual surfaces.***

The same wheel is used to begin the reduction of the lingual surface.

3. Reduction of the lingual surface is finished with a large safe-ended diamond cylinder. The safe end enables the point to be used without damage to the gingival tissue (Fig. 35).

4. The acute mesio and distolingual angles are rounded with the inverted cone diamond point. The safe-end, side cutting is particularly useful on the distal angle; the safe-side, end cutting on the mesial. Room in which to operate is the determining factor. Adjacent teeth are protected by the safe end or side (Fig. 36).

5. Grooves are cut in the mesial and distal sliced surfaces near the buccal surface with a number 701 carbide bur (Fig. 37).

Full Crowns

Full crown preparations without shoulders are prepared in the following manner:

1. Slice the mesial and distal surfaces with a distinct taper toward the occlusal.

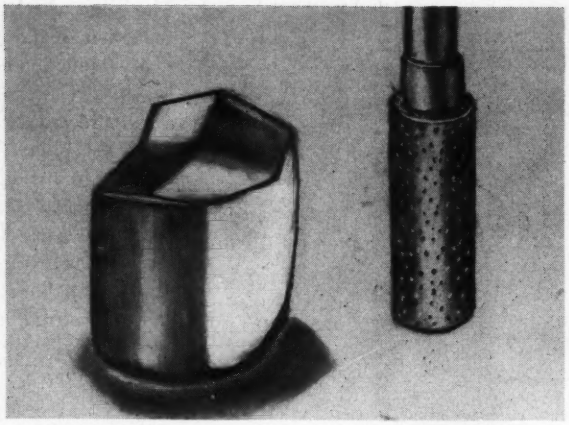
2. Reduce the occlusal surface with a large diamond wheel, following the general contour of the surface.

3. The lingual and buccal surfaces are then reduced with an occlusal taper, using a wheel diamond point followed by the large safe-ended cylinder diamond point.

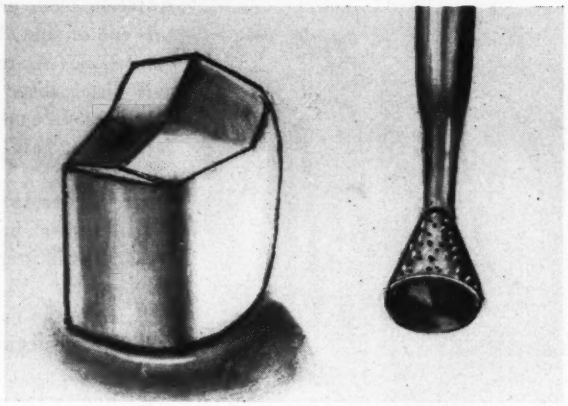
4. The safe-ended or safe-sided inverted cone diamond points are then used to round sharp mesial and distal angles lingually and buccally (Fig. 38).

Three-quarter Veneer Preparations for Anterior Teeth

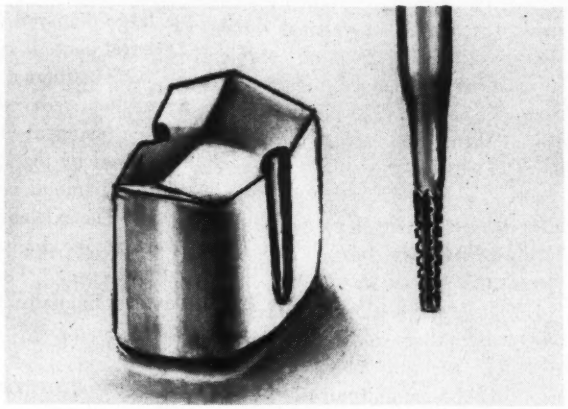
The preparation of three-quarter veneers on cuspids and incisor teeth calls for the utmost delicacy in technique. Esthetic standards prohibit the showing of gold at the incisal and interproximal margins. Ingenious preparations of the lingual surface have therefore been devised which provide adequate strength and retention. These lingual preparations combined with skillful handling of the incisal and interproximal labial angles supply the esthetic results required.



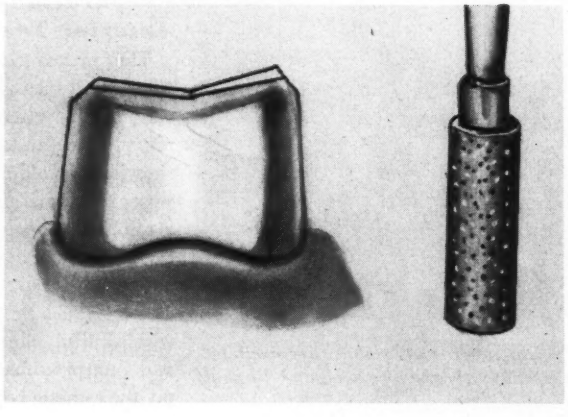
35. A *safe-ended cylinder diamond point is used to reduce the lingual surface. The safe end of the instrument protects the gingiva from injury.*



36. *Sharp mesiolingual and distolingual angles are rounded with an inverted cone diamond point. Either a safe-ended or a safe-sided instrument may be used according to the amount of operating space. The safe side or end protects the adjacent teeth from being injured.*



37. *Grooves are cut into mesial and distal sliced surfaces with a carbide taper bur.*



38. *A full crown preparation similar to a three-quarter veneer preparation.*

Selection of the Instrument—Where adjacent teeth are present, the thickness of the slice made by the diamond disc precludes its use on the proximal surfaces. The thin safe-sided steel abrasive disc (lightning) is used in its place.

Procedure—After securing enough mechanical separation to permit the entrance of the thin disc, the disc is swung toward the lingual. A slice is made at the expense of the lingual of the interproximal surface. Care must be taken not to encroach on the labial surface (Fig. 39).

The process is repeated on the opposite proximal surface.

2. The wheel diamond point is now used to bevel the lingual of the incisal edge to a 45-degree angle. Care must be taken not to remove any of the incisal length of the tooth. (Fig. 40).

3. The wheel diamond point is then used to reduce the lingual from the incisal bevel to the upper margin of the cingulum (Fig. 41).

4. The lingual preparation is extended to the gingival margin by reducing the cingulum with a safe-ended cylinder diamond point, producing a definite wall which adds to the retention (Fig. 42).

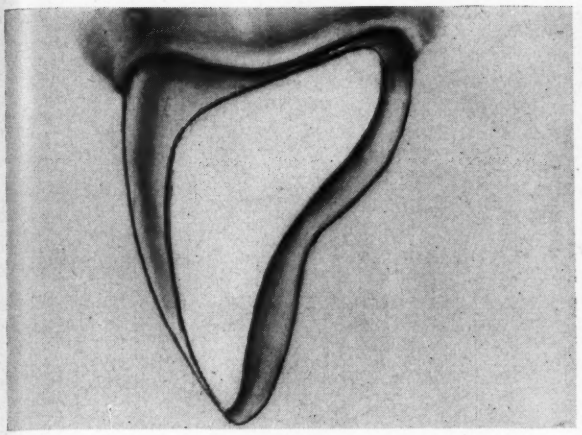
5. The interproximal lingual angles are rounded with the safe-sided inverted cone diamond point (Fig. 43). Where space permits, the safe-ended diamond cylinder may be used to round the lingual angles.

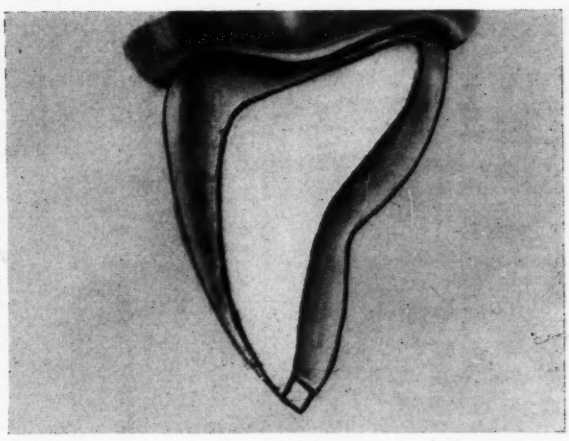
Additional Procedures — Various treatments may be accorded the lingual of the tooth to obtain retention:

1. Grooves may be cut in the interproximal surfaces by using a number 701 carbide bur, held parallel to the labial surface of the tooth. A number 701 carbide bur is used to make these grooves oval in shape. Care must be taken not to undermine the labial enamel (Fig. 44).

2. A groove may be cut in the lingual incisal third just lingual to the incisal bevel with a thin diamond wheel, thus joining the mesial and distal grooves (Fig. 45). (Carmichael type).

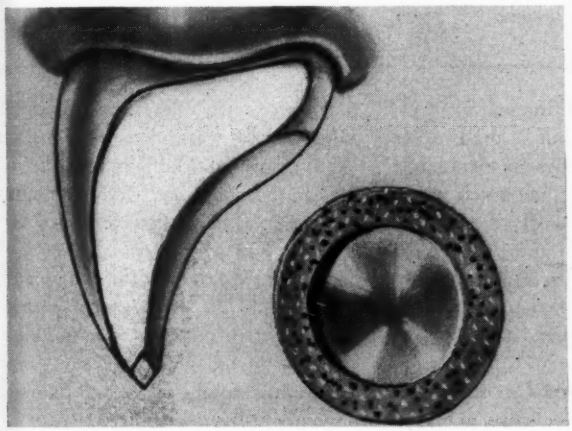
3. An incisal step may be readily obtained by using a wheel diamond point. (Tinker type).

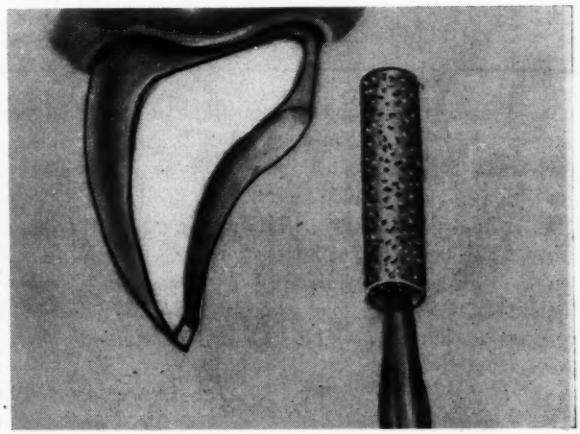




39. *Slice for an anterior three-quarter crown. Care must be taken not to encroach on the labial surface. The slice is made at the expense of the lingual interproximal. Where adjacent teeth are present, mechanical separation is used and a thin lightning disc is substituted for the diamond disc.*

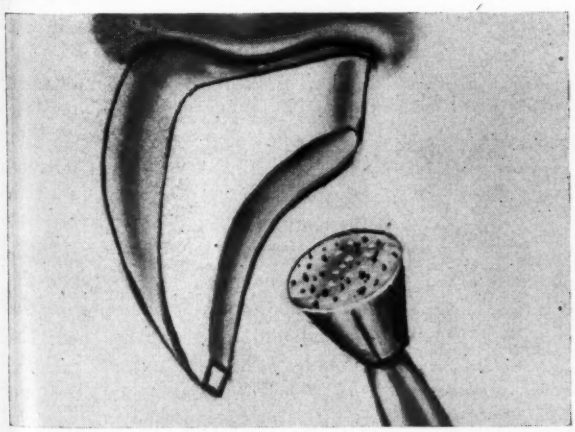
40. *The incisal tip is beveled lingually with a wheel diamond point. The length of the labial surface must not be shortened.*

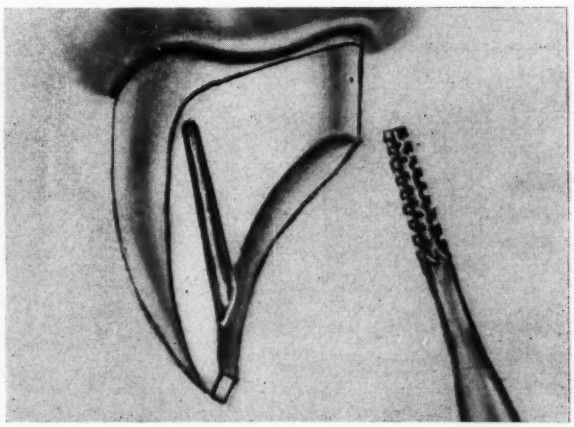




41. *A wheel diamond point is used to reduce the lingual surface.*

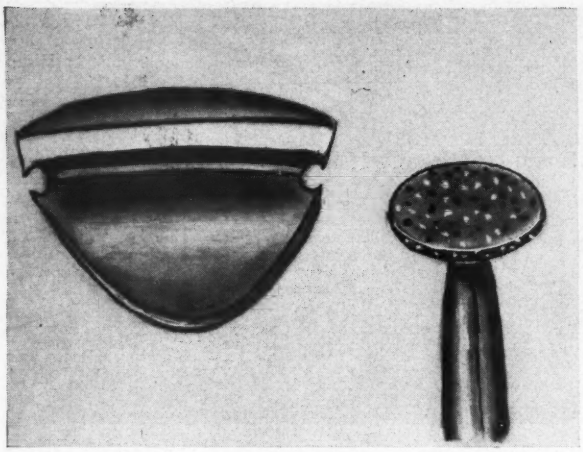
42. *The lingual preparation is continued by reducing the cingulum with a safe-ended cylinder diamond point.*

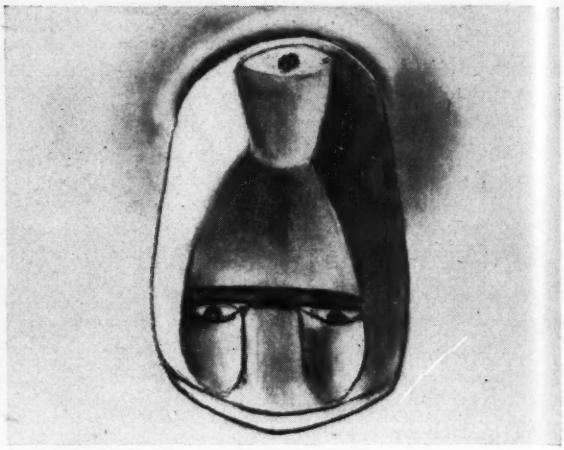




43. *The interproximal lingual angles are rounded with a safe-sided inverted cone diamond point. Where space permits, the safe-ended cylinder may be used for this purpose.*

44. *Grooves are cut into the mesial and distal surfaces with a number 701 carbide bur. The grooves should approximately parallel the labial tooth surface. Care must be taken not to undermine the labial enamel.*





45. *Variation. A thin diamond wheel may be used to cut an incisal third groove joining the two interproximal grooves. Care must be taken not to undermine the labial incisal enamel.*

46. *A pin ledge preparation. The tooth is prepared as a three-quarter veneer. Notches are cut into the lingual surface with a cylinder diamond point; one at the gingival border, two at the incisal third. Into the floor of the notches insert a pin hole with a number 701 carbide bur. Notches and pin holes are kept parallel. Care must be taken not to involve the pulp.*

4. A slight shoulder at the gingival margin of the preparation may be preferred. Such a shoulder may be cut with a cylinder carbide bur.

5. A lingual notch may be cut into the gingival border of the preparation with a carbide cylinder bur. By using a number 701 carbide bur, an accessory pin anchorage may be sunk in this lingual notch.

Pin Ledge Variation

1. The lingual of the tooth having been prepared as for a standard three-quarter preparation, up to the step of cutting mesial and lingual grooves, a carbide cylinder bur is used to cut (a) two small notches in the incisal third, and (b) one small notch in the gingival termination of the lingual. 2. Into the floor of these notches a pin hole is sunk with a number 701 carbide bur. Care is taken to sink the pin holes parallel (Fig. 46).

Anterior Jacket Crowns

1. A diamond disc is placed on the incisal edge of the tooth and a slice is removed down to the interproximal gingival margin. If properly done, this will form the interproximal shoulder. By carefully moving the disc lingually and labially, the shoulder can be continued, following the gum line to the labial and lingual surface. (Fig. 47).

2. With a small thin diamond wheel point, the two interproximal shoulders are united across the lingual and labial, following the gum line. In this way the labial and lingual shoulders are formed (Fig. 48).

(Care must be taken to prevent this fast cutting instrument from cutting too deeply into the tooth.)

3. A large mounted diamond wheel point is used to reduce the incisal edge (Fig. 49).

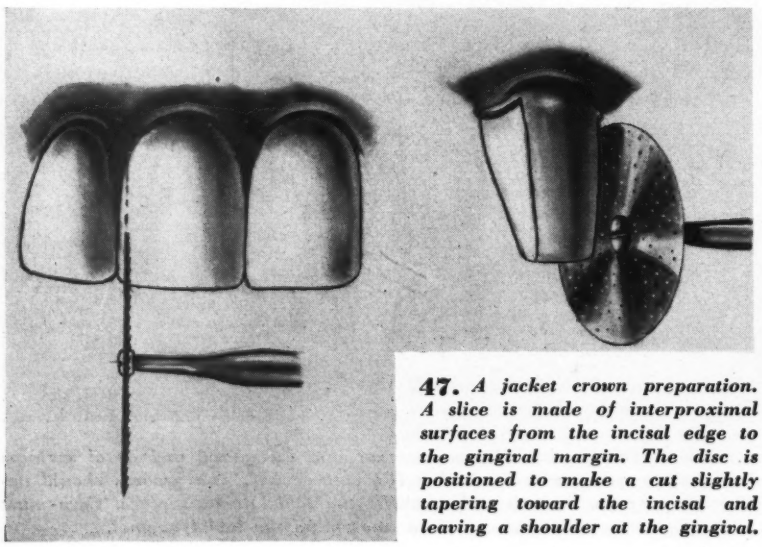
4. Using the same diamond wheel point, the labial surface is reduced by quartering (Fig. 50).

5. The lingual surface is reduced by following the general contour of the tooth (Fig. 51).

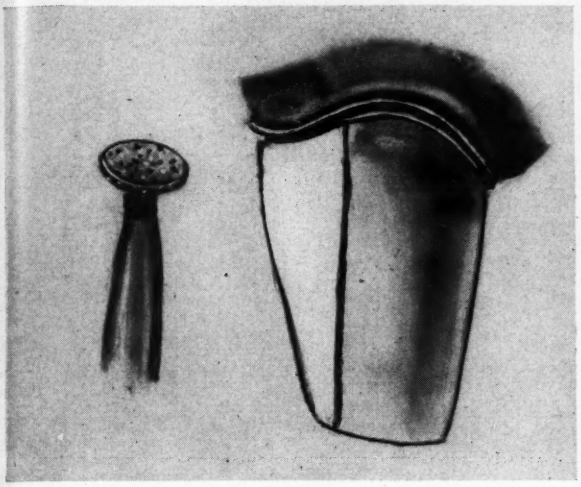
6. A small diamond wheel point is used to complete the removal of the remnant of enamel remaining on the lingual and labial surface near the shoulder (Fig. 52).

7. The inverted cone diamond point, safe-based or safe-sided, whichever is most convenient, is used to round the sharp interproximal lingual and labial angles (Fig. 53).

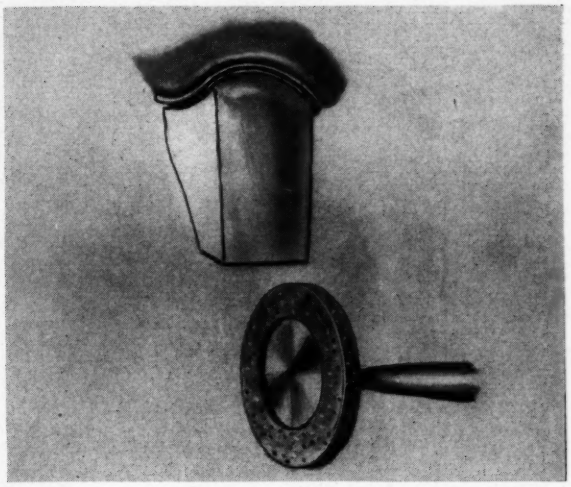
8. A carbide cylinder bur is used



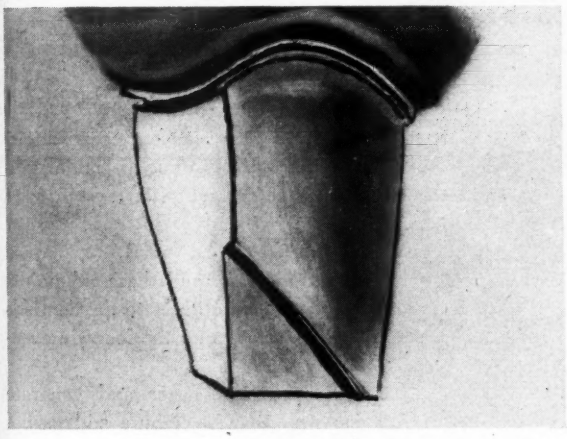
47. *A jacket crown preparation. A slice is made of interproximal surfaces from the incisal edge to the gingival margin. The disc is positioned to make a cut slightly tapering toward the incisal and leaving a shoulder at the gingival.*



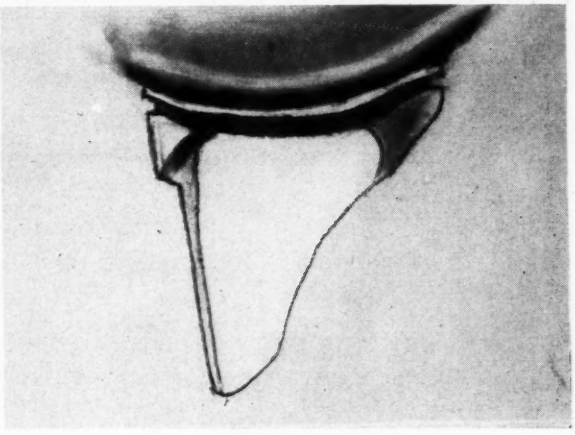
48. *A small thin diamond wheel is used to join the two interproximal shoulders following the contour of the lingual and labial gum margin. Care must be taken not to allow the fast cutting wheel to cut too deeply.*



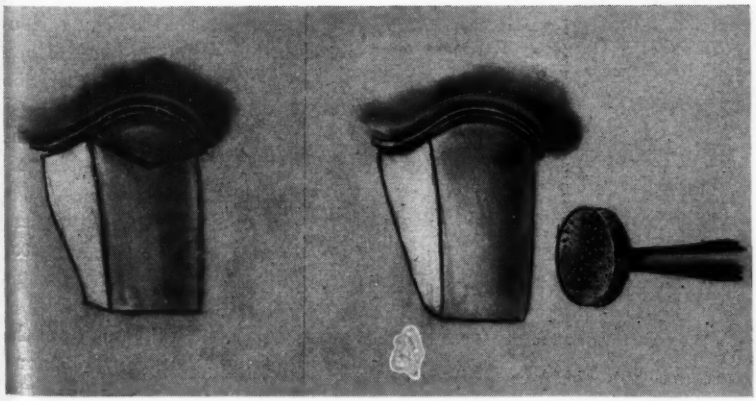
49. *The incisal edge is reduced with a large mounted diamond wheel.*



50. *Using the same diamond wheel, the labial surface is reduced by quartering.*



51. *Using the same diamond wheel, the lingual surface is reduced following contour of tooth.*



52. *A small diamond wheel is used to remove remnants of enamel at gingival borders, lingual, and labial.*

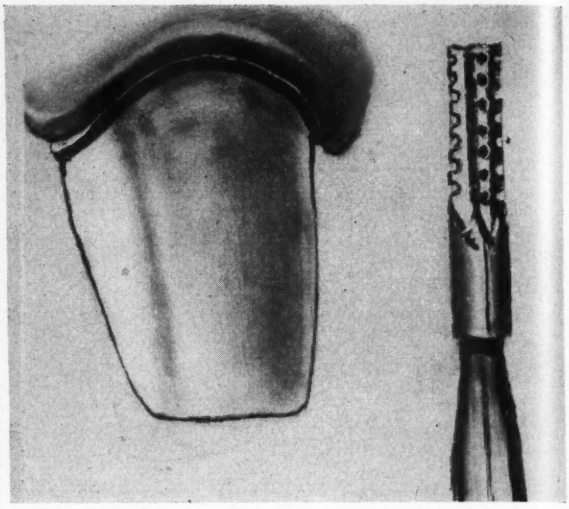
to sink the shoulder below the gingival margin of the gum (Fig. 54).

9. A safe-ended diamond cylinder point is then run lightly around the shoulder to finish the preparation.

10. The stump is polished with a fine cuttlefish disc.

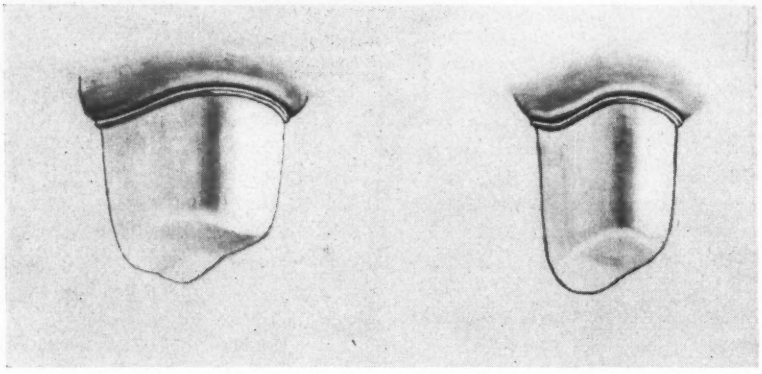
Posterior Jacket Crowns

These jackets are prepared in essentially the same manner as anterior. Wheel diamond points are used to reduce the occlusal, the lingual, and the buccal. Contra-angle points rather than the handpiece instruments are used (Fig. 55).

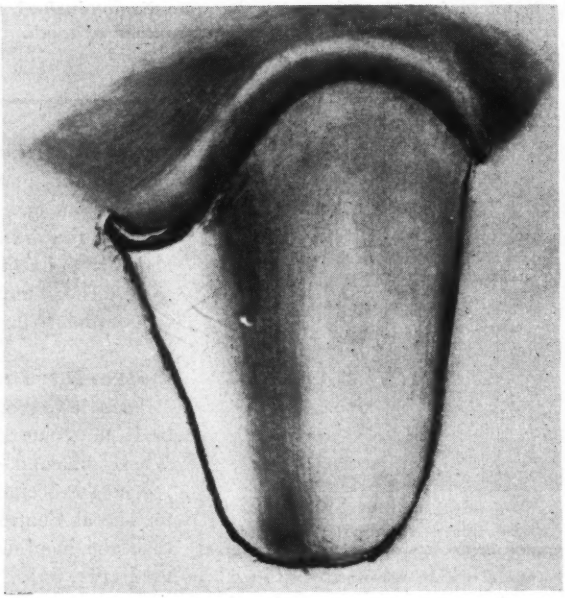


53. *The square angles at interproximal labial and lingual are rounded with a safe-sided inverted cone diamond point.*

54. *A previously formed shoulder is sunk below the free margin of the gum with the indicated size of taper or cylinder carbide bur. The safe-ended diamond cylinder is then used to finish the preparation. Final finish is given by polishing lightly with a fine cuttlefish disc.*



55. *Posterior jackets are prepared in essentially similar fashion to anterior jackets. Difficulty of access is overcome by using angle instruments.*



56. *For so-called shoulderless jackets simply omit the shoulder on the labial surface. The labial surface is finished to a featheredge at the gingiva.*

Shoulderless Jacket Crowns

Shoulderless jacket preparations generally simply omit the labial gingival shoulders (Fig. 56).

Summary

Carbide burs and diamond points are valuable additions to the dentist's armamentarium for the following reasons:

1. They cut faster and generate less heat than steel burs and carborundum points.

2. Because of their longevity they are economical to use.

3. Because these instruments are long lasting and may be arranged in sets convenient for use in various types of preparations, a planned, systematic method of cavity preparation which saves time is possible.

4. The saving of time and the minimum of pain induces added cooperation from the patient.

5. The relaxation of the patient results in less tension for the operator and enables him to achieve greater precision and accuracy.

6. To gain the full value from the use of carbide burs and diamond points proper selection of instruments must be made; and the technique of their use must be carefully followed.

Two East 54th Street.

Correction of MAXILLARY RETRUSION

JOSEPH E. SCHAEFER, M.D., D.D.S.
and RALPH C. RUDDER, M.D., D.D.S., Chicago

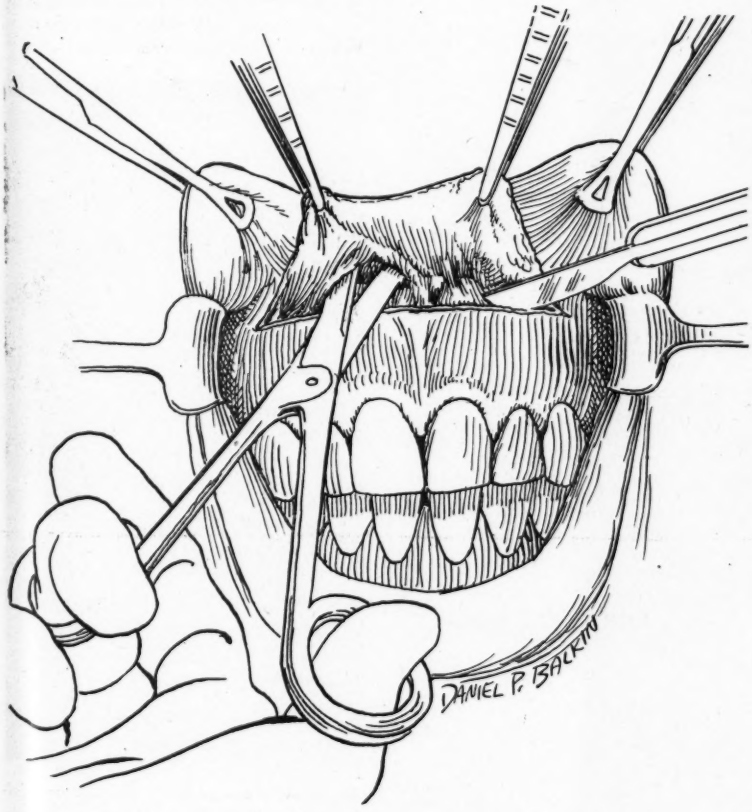
DIGEST

Severe personality maladjustments often accompany prognathism and other facial imbalances which may or may not be congenital.

The patient in the case history presented here suffered a psychologic disturbance from a prominent prognathism of the mandible which had its origin in a congenital cleft lip. Abnormal maxillary development followed an operation for the cleft lip.

A description of the surgical technique, successfully carried out and followed by a marked physical and mental improvement of the patient, is presented herein.

1. *Photograph of patient before correction of maxillary protrusion. Note what has been described as a "dish face."*



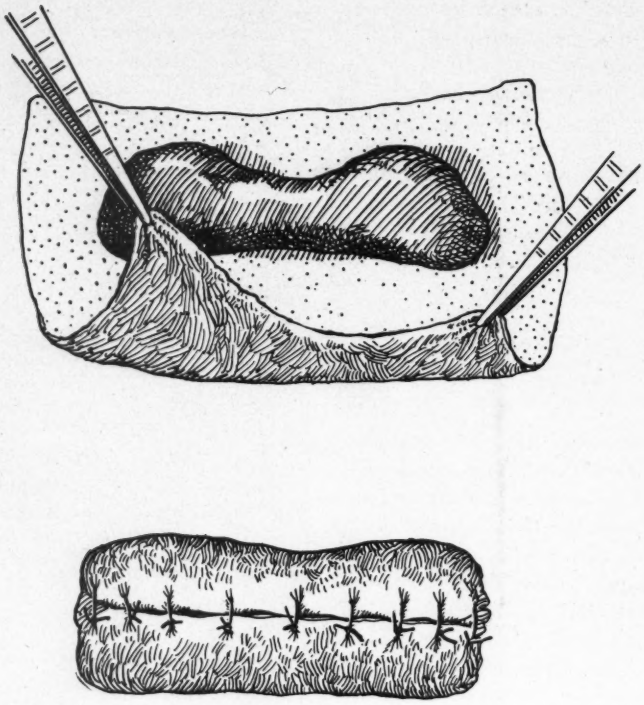
2. *Dividing and freeing tissues in labial and buccal sulci.*

Case History

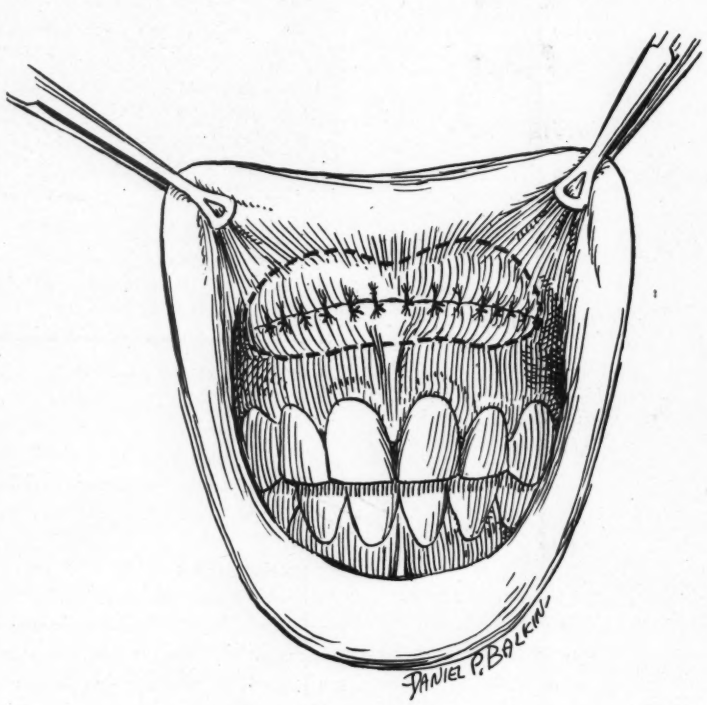
This case was a problem of a typical "dish face." The patient's chief complaint was a marked psychologic disturbance because of her facial appearance.

Examination

A prominent prognathism of the mandible was revealed on examination with an equally prominent retrusion of the maxilla due to abnormal maxillary development following a congenital cleft lip operation (Fig. 1).



3. *Draping modeling compound mold with skin graft.*



4. *Mold repositioned in mouth and sutured to place.*

5. *Photograph showing improvement in facial contour due to insertion of an obturator following skin graft to labial and buccal area.*

6. *Final appearance of patient following bilateral mandibular osteotomies, advancement of buccal and upper lip tissues, and nasal plastic.*

Technique

1. The primary stage of correction of the maxillary retrusion was begun by making a modeling compound mold of the labial and buccal sulci with the tissues divided (Fig. 2).

2. A split-thickness graft (0.016 inch) was taken from the thigh, and after trimming the mold, the skin was sutured to it (Fig. 3).

3. The mold was then repositioned in the mouth and sutured in the mucosa (Fig. 4).

4. An elastoplast pressure dressing, placed in position over the upper lip, was allowed to remain in position for one week.

Surgical Procedure

1. One week later, the sutures and mold were removed. A 90 per cent "take" of the skin graft had occurred.

2. The first surgical procedure involved the formation of a skin-lined pocket in the labial fold, well up onto the jaw.

3. After removal of the six anterior teeth a prosthetic appliance was made. A labial obturator and extension from the periphery of the appliance filled the formed defect, providing a more attractive contour to the patient's face. Psychologic improvement was gradual (Fig. 5).

Additional Surgery

The procedure described was followed by three additional surgical procedures:

1. A bilateral intra-oral osteotomy of the rami of the mandible, which reduced the prognathism.

2. An advancement of the buccal and upper lip tissues was accomplished as follows: (1) An incision was made intra-orally in the buccal sulcus from maxillary tuberosity to maxillary tuberosity and extended into the nose above the columella. (2) This permitted a free dissection of the buccal and upper lip tissues. (3) These tissues were advanced on the maxillae and sutured in a forward position, overcoming what has been called the "dish face."

3. A nasal plastic procedure was performed with a bone graft to the bridge of the nose taken from the crest of the ilium.

Summary

With the insertion of the prosthesis a general improvement of facial contour in this patient was obtained. A marked change in the patient's personality resulted (Fig. 6). She now desires to become a nurse.

804 *West 79th Street.*

25 *East Washington Street.*

MEDICINE *and the Biologic Sciences*

Nutrition in Children

By the use of radioactive carbon, hydrogen, etc., the pathway of food substances has been traced in the body. This is an important factor in establishing some of the fundamentals of body metabolism. As a result, a dynamic concept of the interchange of foodstuffs is now accepted, in which even the constituents of bone are shown to be constantly used and renewed.

One of the most revealing of recent investigations is the demonstration that the metabolism of body fat uses virtually the same enzyme systems known to be used in the splitting of sugars. This discovery is a dramatic contribution to the understanding of the common pathway used by the body when obtaining energy from basic foodstuffs.

Though proteins may be used as a source of energy they are more valuable in replacing worn out and destroyed protoplasm. Fats serve in several capacities; (1) Use by the nervous system, (2) for protective and insulative purposes, and (3) as an excellent source of energy. Both minerals and vitamins are essential for life.

On the basis of these findings a group of children from medically indigent families were selected for study and observation. For purposes of study it was required that they show either some form of chronic infection or a faulty nutritive status or both. Careful history and physical medical examination were performed on each child. The assistance of a dental department, an ophthalmologist, and an otolaryngologist was also available.

Medical advice and treatment were given according to the nature of the illness found. In all cases some form of supplemental therapy was administered consisting of vitamins A,B,-C,D with the addition of iron and liver where they were considered essential.

Twenty per cent of all cases showed an exceptionally poor nutritional status or an infection of greater than usual severity. Multiple conditions were seen to be the rule, with 85.8 per cent of all patients presenting 2 to 5 diagnoses at the same time on the first visit.

Diseased tonsils lead the list and were found in 72 per cent of all cases. Involvement of the upper anterior cervical lymph nodes was second and found in 67.3 per cent of all cases.

Other nutritional defects included the following: (1) marked thinness, (2) definitely poor muscle tone, (3) rough skin, (4) dry hair, (5) increased scleral vascular injection, (6) undue prominence of papillae of tongue, (7) fissures at angles of

(*Continued on page* 514)

Frontal Examination of the CONDYLE

LEONARD FRANK, San Francisco

DIGEST

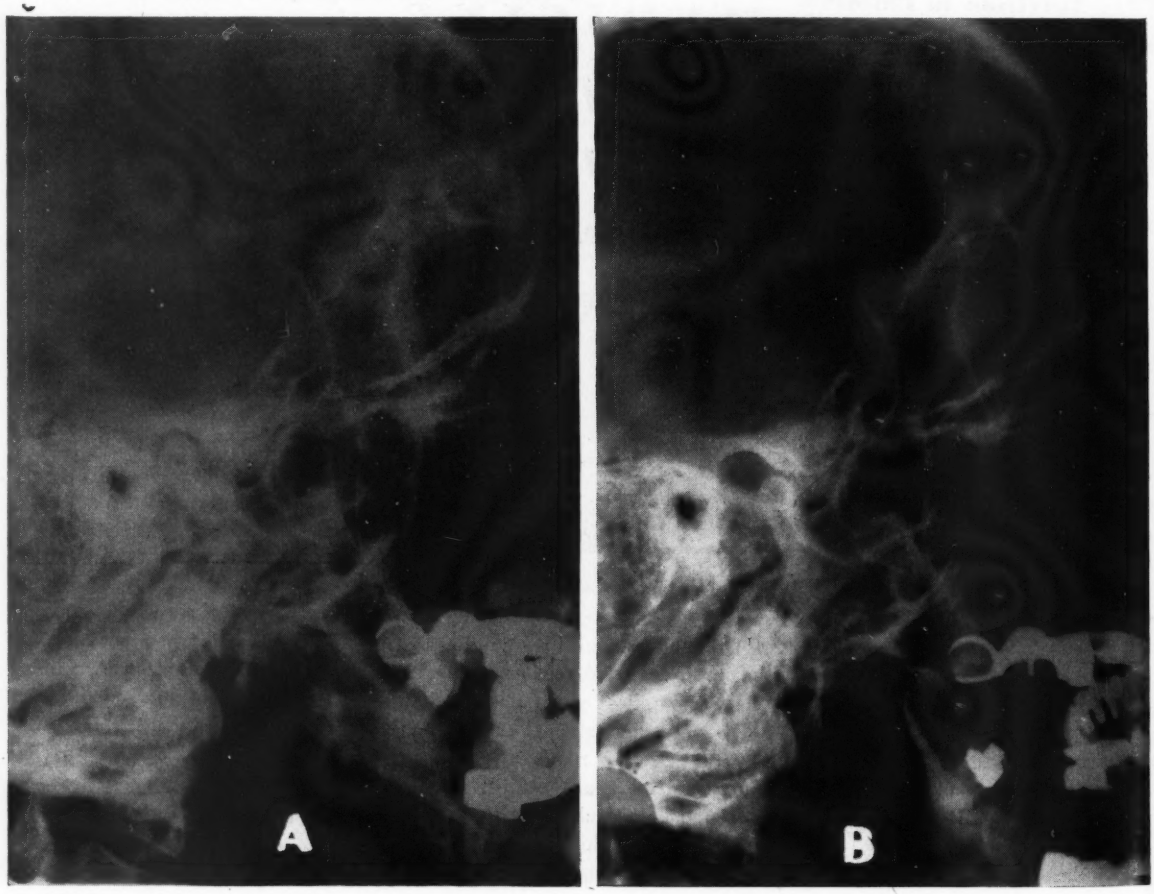
In making a routine examination of the condyle, it is general practice to take two views, one with the mandible in closed position, the other with the mandible in open position. These roentgenograms are taken through the side of the head showing the condyle in its lateral aspect. When the other bones of the body are examined by roentgenography two aspects of the part are always taken, a lateral and an anterior-posterior view. To evaluate the condyle properly it is believed that as well as the lateral view commonly secured, a frontal view is also necessary. This article discusses the value of roentgenographic examination from this angle and describes the technique used in obtaining the pictures.

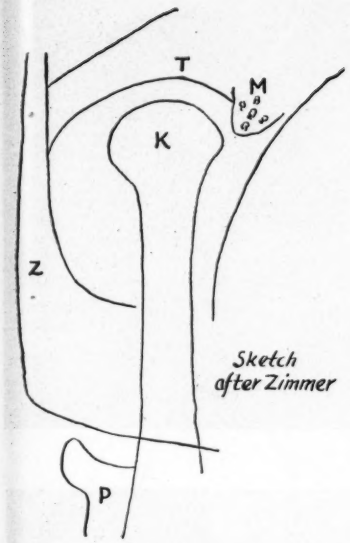
Results of Roentgenographic Examination

1. In the closed position (Fig. 1A) the roentgenogram shows the position of the condyle in the glenoid fossa.

2. In the open position (Fig. 1B) the roentgenogram shows the position of the condyle under the eminentia after its downward and forward movement.

1a. *and* **1b.** *Condyle shown in the conventional lateral aspect. Closed position,* **1a.** *Open position,* **1b.**





2. ***Sketch after Zimmer plotting the location of the parts depicted in the frontal roentgenogram.***

Information Not Provided by the Usual Roentgenographic Examination

These roentgenograms (Figs. 1A and 1B) *do not* show the following:

1. The width of the condyle in its side-to-side dimension.
2. The superior or articular surface in its medial-lateral dimension.
3. The medial-lateral articulator surface of the eminentia.
4. The side-to-side width of the medial-lateral articular surface of the eminentia.

Supplementary View

It was expected that an anterior-posterior or frontal view of the condyle would furnish some information concerning the following: (1) the width of the condyle, (2) its neck, (3) the space between the eminentia and the condyle when the mandible is in open position, (4) arthroliths and erosion of the articular surfaces of the condyle and the eminentia might be uncovered, and (5) a frontal view would also be of great value in examining fractures of the neck of the condyle, particularly when a lateral displacement exists.

Information Incomplete

It is logical that scientific examination of the subject should include both the lateral and frontal aspects of the condyle. Although occasionally in fractures of the condyle an anterior-posterior view of the skull is made in an effort to determine possible displacement of the fracture, the information obtained from this view is more general than detailed and therefore does not completely fulfill its purpose.

Technique

The technique to be described gives what might be termed a close-up view of the condyle and the eminentia. It presents more detailed information not only of fractures but of many other anatomic and pathologic changes that take place in the condylar region.

Figure 2—This is a sketch after Zimmer[1]. It is a schematic drawing of what appears on a frontal roentgenogram and a guide to the location of the different parts depicted. The parts are designated in the picture by the following letters:

T—the articular tubercle.
K—the condyle.
Z—the zygomatic arch.
M—mastoid cells.
P—the coronoid process.

Figure 3—What might be termed normal condyles are illustrated in Figure 3. The right condyle in this illustration is the frontal view of the lateral position shown in Figures 1A and 1B. This study clearly defines the following parts: 1. The articular surface of the eminentia. 2. The neck of the condyle. 3. The space between the eminentia and the articular surface of the condyle with the mandible in open position.

Differences in Spaces—Figure 3 shows the right condyle (a) in a more lateral position than the left and (b) dropping lower under the articular tubercle than the left. This is made evident by the difference in the spaces between the eminentia and the articular surfaces of the condyles. This difference in the spaces may have been caused by traumatic occlusion as the patient had lost a number of teeth over a period of several years.

Figure 4—In open position the point of the chin of this patient moves sharply to the left. In the study of his condyles from the frontal aspect the left condyle has moved laterally outward while the right condyle has moved inward. The left condyle has moved downward and forward under the eminentia. This can be seen by the space between the articular surfaces of the condyle and the eminentia but the right condyle has not moved downward and forward; this can be determined by the lack of space between the eminentia and the articular surface of the condyle.

Figure 5—A view of a fractured condyle is shown in Figure 5. 1. The lateral view of the mandible (Fig. 5A) shows a complete fracture of the condylar head. It has been forced forward away from the ramus. 2. The frontal view (Fig. 5B) shows that the condyle has also been forced upward in front of the eminentia; this can be determined by the partial superimposition of the condyle over the eminentia.

Zimmer Technique

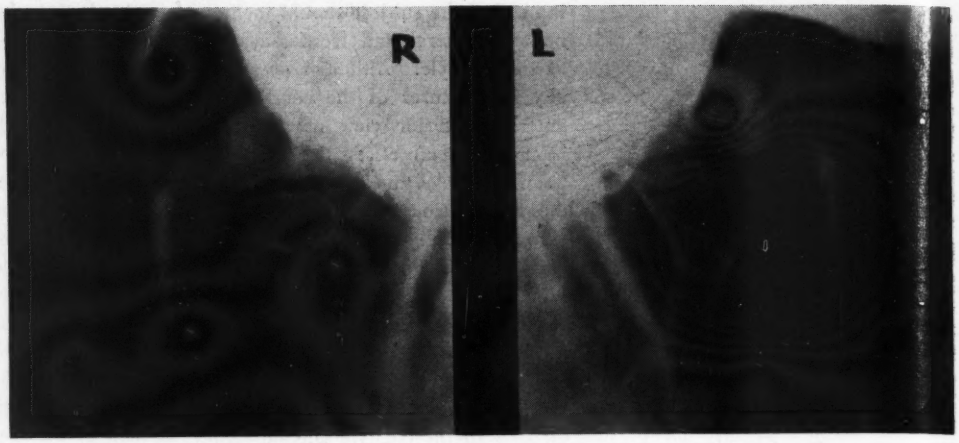
All the studies shown were made with the Zimmer technique.

Position of the Patient—The patient should be supine with the chin pulled slightly inward.

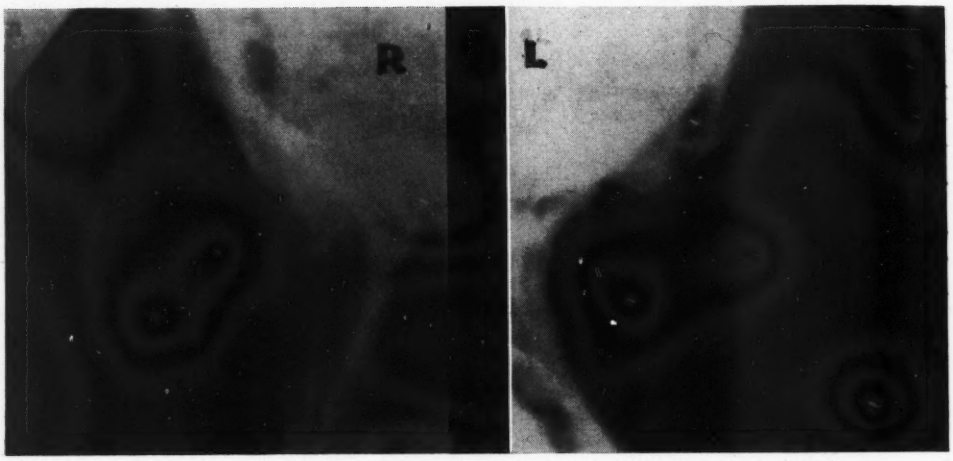
Angle—1. The tube is tilted 30 degrees toward the feet and 20 degrees toward the ear. 2. The central ray is directed through the upper medial quadrant of the orbit on the side to be examined (Fig. 6). 3. The cone is brought as close to the orbit as possible.

Film—1. The film is placed under the neck and occiput with the center shifted downward and outward in relation to the condyle. (This is to compensate for the shift in the picture with the oblique direction of the ray.)

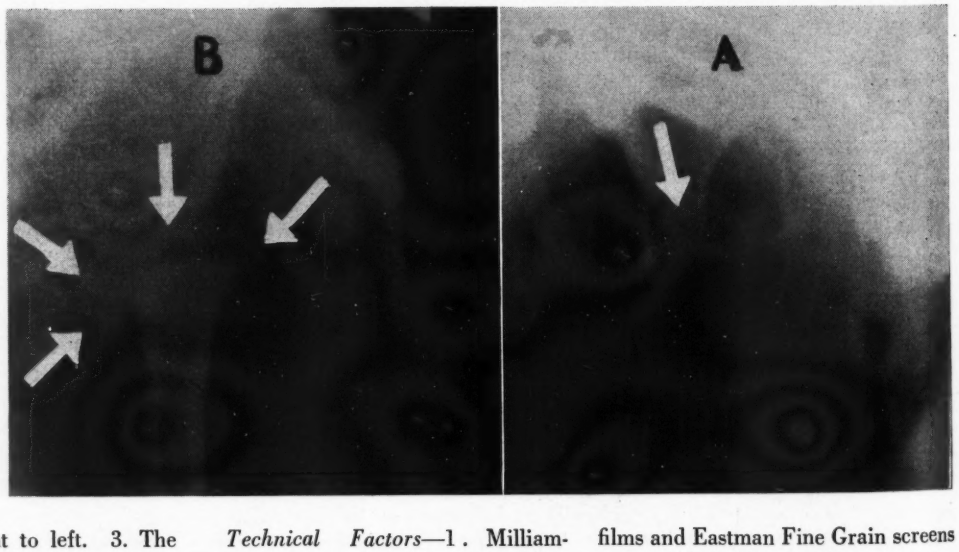
Separate Exposures—With this technique the right and left condyle must be taken separately. This is not difficult if the following method is employed: 1. After the right condyle has been pictured, the film is removed. 2. A fresh film is put in position under the left condyle and the 20 degree lateral angle is



3. ***Roentgenogram of normal condyles.***



4. ***Roentgenogram showing lateral movement of condyles.***



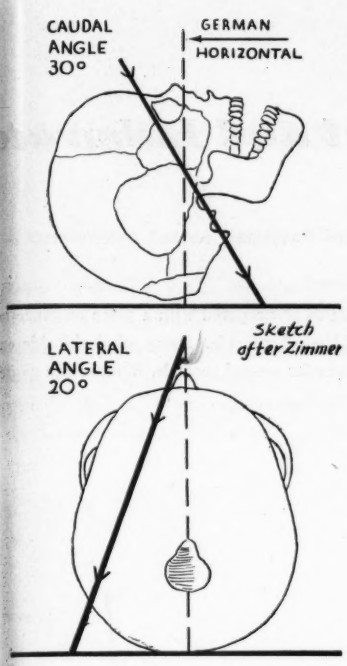
5a. ***and*** **5b.** ***Fractured condyle. Lateral view,*** **5a.** ***Frontal view,*** **5b.**

changed from right to left. 3. The tube is then shifted laterally to the left orbit. 4. Care should be taken to see that the patient does not change position during this transition.

Technical Factors—1. Milliamperes -10. 2. Kilovolt peak -58. 3. Exposure time - 1 second. 4. Distance - contact.

Materials—Eastman Blue Brand films and Eastman Fine Grain screens were used in these studies.

Making the Exposure—Just before making the exposure instruct the patient to open the mandible to its full



6. ***Sketch after Zimmer showing direction of angles used in reference to the German horizontal line.***

extent in order to bring the condyle down and under the articular tubercle. When the mandible has opened to its full extent, make the exposure.

450 *Sutter Street*

Zimmer, E. A.: Die Roentgenologie des Kiefergelenkes, Ztscher. f. Zahnheilk **51**: No. 12 (December) 1941.

Dental Caries

IN 1885 MILLER[1] drew attention to the fact that acid-producing organisms were common inhabitants of the mouth, and that if they were incubated with sugars they produced acids capable of dissolving the enamel covering a tooth. This led to what became a generally accepted hypothesis about the cause of dental decay, which briefly stated, is that food debris such as carbohydrates, if allowed to stagnate in the mouth, is broken down by bacteria with an organic acid as an end product. This acid acts directly on the calcium phosphate which forms the bulk of the enamel, producing a soluble calcium salt.

Many attempts have been made without success to reproduce the carious process *in vitro*, for although the enamel can be disintegrated in this way the appearance bears no resemblance to that of caries when produced in the mouth. The theory, however, seems to be supported by the fact that caries commonly starts in a tooth in sites where food stagnates, and, conversely, rarely occurs on a surface that is kept clean and free from food and debris by the action of the tongue or lips. A diet containing an excess of carbohydrates, particularly if its consistency is such that it adheres to the teeth, also predisposes to rapid caries.

On theoretical grounds the fact that chemical analysis shows that inorganic salts compose about 99 per cent of enamel, calculated by weight, suggested that the organic compound was too small to be of importance. The destruction of enamel, therefore, would appear to be a process of decalcification. No satisfactory explanation has, however, been put forward to explain why acids formed on the surface of a tooth should combine with the fixed calcium of the enamel rather than with the more freely available calcium ions in the saliva, and little account has been taken of the buffering qualities in the saliva. Latterly, more attention has been paid to the organic component of the enamel, and it is now recognized that, although it forms an apparently insignificant part when assessed by weight, when account is taken of the different density it is found that by volume it forms about 5 per cent of the enamel.

Until recently histologic investigation has been limited to the examination of hard-ground sections, because the organic matrix is also freely soluble in acids and was lost when attempts were made to prepare a decalcified section by ordinary methods. But Frisbie[2] at San Francisco and Sognnaes[3] at Harvard have now overcome this difficulty and, using special methods of fixation, have demonstrated that the organic matrix of the enamel can be preserved in calcified sections. Frisbie and his coworkers have thus been able to produce convincing histologic evidence that the initial stage in enamel caries is the result of a bacterial attack on the organic matrix, but so far they have not succeeded in isolating any mouth organism that will attack enamel *in vitro*.

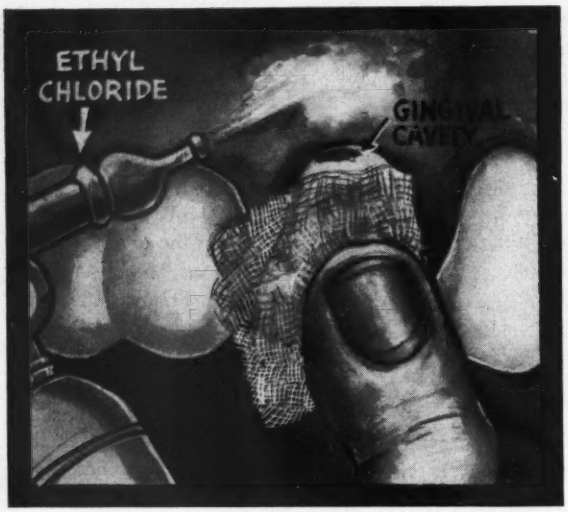
In 1937 Dr. P. Pincus[4] demonstrated that certain proteolytic bacteria could bring about the disintegration of enamel in a media that remained above pH 7 and contained no carbohydrate. They presumably did this by breaking down the organic matrix. In this issue of the *Journal* he describes more recent work which suggests a double action. He considers the enamel matrix to be a mucoprotein containing mucoitin sulphuric acid, and he claims to have isolated from the mouth an organism that produces an enzyme, sulphatase, that can break down a mucoprotein and at the same time liberate sulphuric acid; the latter combines with the calcium phosphate and forms a more soluble salt. That caries is, in fact, the result of such a process awaits further proof.

So far no one has succeeded in isolating an organism from a carious lesion that will attack the organic matrix of intact enamel. The problem would now appear to rest with the bacteriologist. A solution is urgently required, for until it is found it is impossible to plan the prevention of caries in a rational way.

From *British Medical Journal* (August 13) 1949.

[1]Independent Pract. **6**:289, 1885.

[2]J. Am. Coll. Dentists **11**:243, 1944. J. Dent. Res. **26**:181, 1947.
[3]Anat. Rec. **99**:133-134 (2) 1947.
[4]Brit. M. J. **63**:511, 1937.



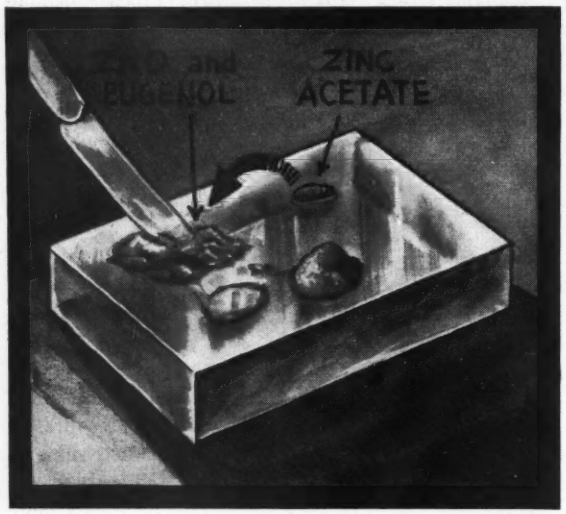
1

Clinical and Laborator

Anesthesia of Cervical Cavities

J. A. Carney, D.D.S., Montreal

1. Cover the carious area to be prepared with a piece of gauze to protect it against the cold ethyl chloride. Spray ethyl chloride on the soft tissue *over the apex* for several seconds. Remove the gauze and prepare the cavity.



2

Protection for Deep Cavities

M. E. Soifer, D.D.S., Hartford, Connecticut

2. If a cavity is extremely deep, use a mixture of zinc oxide and eugenol as a base to which a crystal of zinc acetate is added during mixing. The zinc acetate will produce setting of the cement within three or four minutes into a hard material in which amalgam may be condensed.

3

Nitrous Oxygen Anesthesia

Howard E. Kessler, D.D.S., Cleveland

3. Before the induction of nitrous oxide-oxygen anesthesia, ask the patient to clasp his hands firmly over his abdomen. When the patient goes into the excitement stage of anesthesia, the muscles become taut so that the fingers usually are locked together. As a rule, the fingers remain locked even though the patient is otherwise completely relaxed during the anesthetic.

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SUGGESTIONS . . .

A Convenient Cotton Dispenser

Robert Sterinbach, D.D.S., Brooklyn

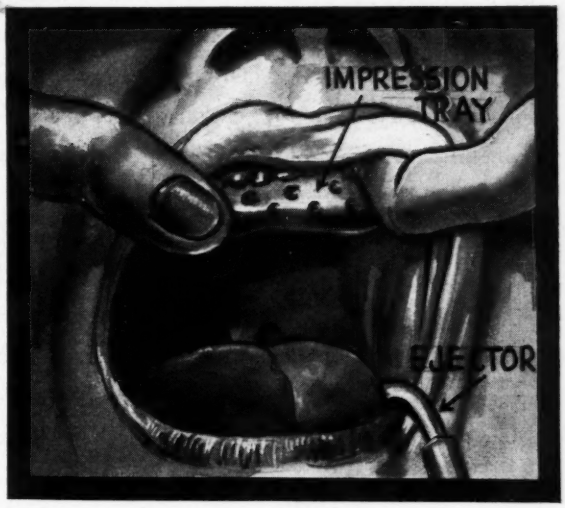
4. A cotton applicator inserted between the glass holder and the cardboard insert of a waste receiver makes a convenient cotton dispenser. It is not necessary for the dentist to touch the cotton with his fingers. It also saves room on the instrument tray. The applicator is discarded after each patient.

4

Prevention of Gagging

William Granirer, D.D.S., Far Rockaway, N.Y.

5. When taking maxillary partial denture impressions the patient frequently gags and tries to remove the impression tray. To prevent this, put a saliva ejector under the tongue immediately upon the insertion of the impression tray.

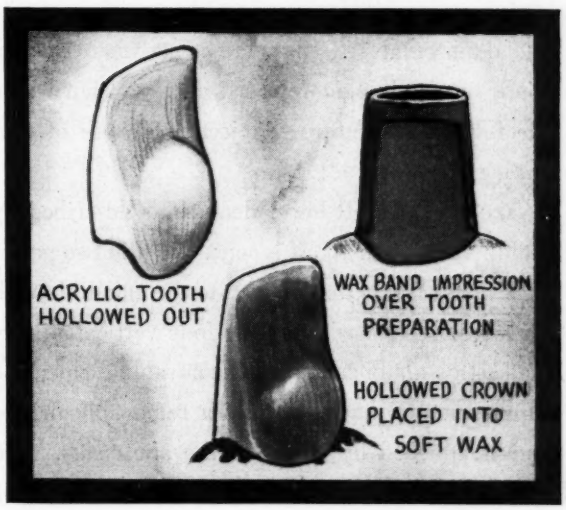


5

Construction of an Anterior Acrylic Crown

John D. Hoban, D.D.S., Falls City, Neb.

6. An acrylic tooth of proper size and shade is hollowed out from the lingual with a vulcanite bur. A wax impression is taken in a band of the preparation. The hollowed crown is placed in the proper position in the soft wax and both are removed. Invest, boil out, and pack new acrylic in the lingual portion. The lingual acrylic will fuse to the acrylic facing.



6

suitable illustrations; write a brief description of the technique involves; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Turn to page 516 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S Page

AN INGENIOUS application of the metallic implant principle of surgery to lower denture construction is described by Goldberg and Gershkoff in this issue. For years extensive hard tissue loss in the skull has been corrected by the use of metal implants. In recent years metal implants have been used in orthopedic surgery to immobilize fractured bones. In oral surgery external fixation appliances have been used to treat fractures of the edentulous mandible. Dentists have, on occasion, cooperated with neurosurgeons in constructing castings to correct severe defects of the cranial bones. The principle of using nonirritating metals of the chromium-cobalt-molybdenum combination is established in general surgery. The application of this principle to dental surgery should not be considered an extreme or radical procedure.

The use of the metal implant in lower denture construction is not suggested as a routine method. It should be considered for use in those cases where conventional lower dentures have been unsatisfactory. There are some patients who are intolerant to lower dentures. These include persons with excessively flat or excessively sharp ridges, extreme bony excresences, low muscle attachments, large and hypermobile tongues, and atonicity of the facial musculature. There are others where no anatomic or physiologic defects are present but where the full lower denture is rejected because of psychologic reasons.

The implant full lower denture as described by Goldberg and Gershkoff is constructed in two parts: 1. A metal frame that is fixed to the mandible with screws and from which arise four vertical pillars that act as abutments. 2. A removable element or superstructure that resembles a removable bridge and is attached by clasps to the abutments. The implant metal frame follows the configurations of the bony ridge and is placed submuccally in a surgically prepared trench. The frame is of mesh-like construction which allows the tissues to proliferate around it and bind it into position. The abutments protrude into the oral cavity from the frame and, after healing takes place, are rigid enough to support the removable superstructure.

A metal alloy, such as vitallium, has stood the test of time without producing tissue irritation. Its many uses in orthopedic surgery have proved that it is safe to use metal alloys by implantation in either hard or soft tissues.

There might be an objection raised by some clinicians to the surgical procedure necessary in implantation for a full lower denture. The objection would seem to be without particular merit. There is no bone or soft tissue removed, so the operation appears to be less traumatic than alveolectomy or the removal of submerged or impacted teeth. The soft tissues over the ridge are cleanly incised, retracted, and the implant casting is gently placed upon the exposed ridge and fastened to position by four screws. After being made secure in position the soft tissues are coapted and sutured into position. There should be no trauma or shock from this relatively minor operation.

We have all encountered persons whose lives have been blighted and made miserable because they could not wear a full lower denture with comfort and satisfaction. We have all known persons who have made the rounds of many dentists and have a drawer full of useless dentures to exhibit as their unhappy trophies. For those in such extreme plights, the implant denture should be welcomed as a blessing. It is not to be considered as a routine but is one offered as a definitive treatment when lower dentures constructed by conventional methods have proved unsatisfactory.

(*Continued from page* 505)

mouth, (8) gingivitis not associated with dental causes, (9) extreme nervousness for which no other cause could be assigned, and (10) evident pellagra, rickets, or other fully developed faulty nutritional status.

The commonest statement made in complaint by the mother was that the appetite was poor.

Tonsillectomy and adenoidectomy were an almost routine procedure when indicated. However, they were purposely delayed in some children to see what remedial effect supplemental therapy would have. In a large majority of those receiving supplemental therapy such an improvement was made that it was unnecessary to remove tonsils and adenoids.

The frequency of serious past illnesses is believed to be important. Pertussis heads the list, being practically 3 times as frequent as the next most frequent past illness, which is pneumonia. Pertussis is a far more serious illness than it is often given credit for. It is the cause, not only of the highest mortality found today among the communicable diseases of children, but it is also a precursor of chronic illness of such frequency as to merit close attention.

In general, supplementation resulted in (1) a lessening of the infection and (2) improvement of the nutritional status. Improvement was noted in several other ways: (1) a better appetite, (2) an increased growth, (3) improvement in school work, and (4) a better attitude and behavior pattern.

These findings are significant. It is shown that when dietary supplementation is administered to all cases of chronic infection for a proper length of time, there is produced in a large majority of such children, a real and significant reduction, not only in the infection and poor nutritional status found but also in other retardations so commonly found.

Rawlings, Junius M.: Relation of Nutrition to Infection in Children, Am. J. Pub. Health **139**:858-861 (July) 1949.

Injection of Gasserian Ganglion

Alcohol injection of the gasserian ganglion has been used for the relief of trigeminal neuralgia for some time. There are two principal methods for injection of the ganglion, (1) the ascending route and (2) the horizontal zygomatic method of injection.

The horizontal method is comparatively easy to master, but it is impossible to use it in 8 to 10 per cent of patients because of an anatomic anomaly. This is a bony bar which completes the pterygo-alar foramen. This bony bar is present in a higher percentage of Negroes.

In the horizontal method, the aim is to inject the mandibular division of the trigeminal nerve at the point of its exit from the foramen ovale. A straight needle 10 centimeters long and 1.0 to 1.5 millimeters in diameter is used. The needle is marked in centimeters from the point up to 5 so that the operator may know what depth he has reached.

The skin is prepared and anesthetized. The needle is inserted through the cheek behind the last upper molar at the lower border of the zygoma 2

to 2.5 centimeters in front of the descending root of the zygoma. The needle is directed slightly upward and a little backward, hugging the base of the skull, until it reaches the mandibular nerve at its exit from the foramen ovale at a depth of about 4 centimeters from the zygoma.

The depth varies slightly depending upon (1) the shape of the skull, and (2) the thickness of the soft parts, but it is never greater than 5.5 centimeters from the surface. If difficulty is encountered in passing through the sigmoid notch of the mandible, it may be overcome either by having the patient's mouth wide open or by depressing the handle of the needle slightly. The needle passes through skin, subcutaneous tissue, masseter muscle, posterior portion of the temporal tendon, superior border of the external pterygoid muscle and anterior to the temporomandibular joint.

For best clinical results in the treatment of trigeminal neuralgia by injection through the foramen ovale, it is suggested that the ascending approach be used, preferably under the fluoroscope. The ascending method may be accomplished either by an intrabuccal or an extrabuccal injection. In either case the needle is directed behind the upper third molar. The needle is slowly and carefully moved upward until it reaches the infratemporal surface of the great wing of the sphenoid bone. The point of the needle is directed backward between the infratemporal surface and the external pterygoid plate as long as bony resistance is felt. As soon as this resistance stops the needle has entered the foramen ovale.

There are several modifications of this technique. The introduction of a catheter into the eustachian tube serves as a guide to the location of the foramen ovale when the fluoroscope is used. Standardization in the procedure has made the injection easier and safer.

Chouke, K. S.: Injection of the Mandibular Nerve and Gasserian Ganglion, Am. J. Surg. **78**:80-85 (July) 1949.

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 460 *and* 461)

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$10 will be paid to author on publication of accepted suggestions.

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Of Dental Digest, published monthly at Pittsburgh, Pa., for October 1, 1949.

State of Pennsylvania,
County of Allegheny, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared M. B. Massol, who, having been duly sworn according to law, deposes and says that he is the Publisher of the Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

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(Signed) M. B. MASSOL,
Publisher

Sworn to and subscribed before me this 22nd day of September, 1949.

(Seal) Ruth B. Kost, Notary Public.
(My commission expires February 1, 1953)

Penicillin Reaction in Oral Use

Observations of patients using penicillin locally in the mouth has revealed some reactions associated with the areas involved. The two common conditions are discoloration of the tongue and stomatitis.

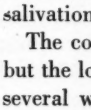
Discoloration of the tongue occurs in at least 30 per cent of patients using penicillin continuously for oral conditions. It is often unnoticed by the patient and it is not accompanied by discomfort. The discoloration begins two to four days after starting treatment and wears off in five to fourteen days. It may be yellowish brown, brownish green, greenish black, or black.

When stomatitis occurs, it usually follows a more or less definite pattern. The patient, after being treated for three to five days with topical penicillin for some oral or pharyngeal condition, complains of soreness of the tongue. At times, the whole mouth and pharynx are sore and there is extreme discomfort on taking hot fluids, spiced foods, and condiments. Smoking may cause distress. Occasionally ageusia and lack of salivation are present.

The condition lasts six to ten days but the loss of sense of taste may last several weeks. Neither nicotinamide deficiency nor the lozenge base is responsible for these oral reactions.

Reactions do not occur until there has been a complete change in the character of the oral flora. This takes about forty-eight hours. It seems reasonable therefore to limit the use of penicillin for treatment of oral infections to this length of time, as a rule.

Cross, W. G.: Oral Reactions to Penicillin, British Medical Journal 1:171-173 (January 29) 1949.



Psychosomatic Symptoms from War

The effects of war are deleterious to the health of the people. War results in a lack of food, shelter, clothing, medicine, and hygiene.

Recent observations demonstrate

at war is the cause of deterioration ot only through physical insults but lso through emotional insults. These notional insults influence the be- avior of groups and persons as well s their bodily health.

The more obvious physical dis- bilities appearing in the course of ar and following it are those associ- ted with the soldier himself. Many oldiers and potential soldiers display hysical disturbances generated by e emotions. On the other hand, cer- in persons are apt to improve in hysical health on going into service. oth these reactions may occur in e so-called passive-dependent state.

These two manifestations were par- cularly well shown during and after e war in the so-called allergic group f persons. Many had recurrences of eir troubles on notification of being alled or on entry into service.

Another group of persons who xhibited allergic symptoms during e war were the wives of the absent en. Here again the two opposite re- ctions were noted: 1. In one group e absence of the husband apparently enoted insecurity; symptoms were hen precipitated. 2. In the other roup, the departure of the husband eant a degree of independence hich had been wished for but had een lacking. This was a common re- ction among the female allergic pa- ents, who are often the dominating pe, as a defense against their pas- ve dependency.

There are two main problems when e children are considered: 1. The rst is related to the separation of the hild from the father or the mother r both. 2. The second to the return f the father or mother or both. gain, the allergic group is quite sus- ptible to emotional disturbances sulting from problems created by ar and the aftermath of war.

During the war and afterward, ma- rnal rejection and the threat of aternal rejection were greatly en- anced. As a result, many children ffering from the somatic effects of is emotional trauma were seen.

The departure of the father appar- tly increased the feeling of in- curity in the mother. This often

(*Continued on page* 520)

THE NEW CHART: There are 31 charts in the *tenth* (and latest) reprinting of *Visual Education in Dentistry*. The newest addition to this ever-popular series of charts most frequently used by practitioners everywhere in their patient-education programs is a four-page chart in color entitled *THE DANGERS OF PYORRHEA AND POSSIBLE COMPLICATIONS*. It portrays pictorially possible complications in the blood stream which could result from a pyorrhetic condition (see pages 395-98 in September *Dental Digest*). Many practitioners are familiar with the other 30 charts in the booklet which they have been using regularly in their practices for a few years. Each chart tells a specific story with easily understood illustrations and descriptions.

TYPICAL COMMENTS: "I have just seen your latest reprinting of Visual Education in Dentistry and think it is one of the most interesting and valuable sources of dental information for patients. I am planning to have my new office in about two weeks and by all means I should like to have at least two copies at that time. Will you, therefore, send the copies by air mail, charging me for the extra postal expense. Congratulations on the tenth reprinting!"—A. S. L. W. "Will you please send me information regarding patient-education material you have available. I am already using Visual Education in Dentistry with great satisfaction." D. L. R. "I am a subscriber to Dental Digest and have received Visual Education in Dentistry. I would like very much to have a second copy of the booklet. Enclosed is another $1.00. I make great use of this educational material." I. P. Space limitations make further quotations impractical but the above comments from recent letters exemplify the high regard of the dental profession for the booklet.

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(*Continued from page* 517)

aggravated or provoked a sense of rejection on the part of the child, producing, precipitating or aggravating his allergic symptoms. The departure of the mother to the factory appears to have been an even more direct manifestation of maternal rejection to the child. Children also suffered from a sense of rejection from the constant moving about of the family which was so common during the war.

One of the most interesting phenomena noted was the return of the father after long absence—often after the child had lost all conscious memory of him, or, as in the case of a child born after his departure, had no remembrance of him at all. His return then represented a threat to the child by presenting a rival for the mother's affection.

These facts should be kept in mind when dealing with these persons and with children. Better cooperation on the part of the patient can be obtained by an appreciation and understanding of his background.

Miller, Hyman and Baruch, Dorothy W.: Psychosomatic Symptoms Resulting from the Impact of War, Am. J. Dis. Child. **77**:703-708 (June) 1949.

Contra-Angles

Ideas, Unlimited

Every now and then a reader writes to us in a state of acute indignation to complain that some technical article is a plagiarism of a pet idea that the reader held for many years. Patiently we answer to say that ideas are not patentable or subject to copyright, that the only way to establish priority for anything is to publish. Although ideas are the springboard from which all science develops, they are at best vague and ill-defined experiences. Ideas are cumulative and originate from many impressions and events. Little that any of us do is entirely original. We are bombarded and buffeted in a sea of sensations from the moment of birth. Most of these sensations produce only feeble imprints or ones that are standardized among all of us.

In the circumscribed field of dental science we may trace our "original" contributions down the field of time to find that the "original" is a refinement of what someone else explored and discovered before. The fact that the "original" did not spring full-formed and without antecedents does not lessen its worth. He who can refine and apply something old to a new purpose is entitled to credit and approval. Only when the "originator" forgets his heritage of knowledge and is so self impressed that he does not acknowledge his debt to others may we feel perturbed. The shallow mind that insists that "his technique," "his method," "his procedure" is exclusively "his" should be subject to cen-

sure and ridicule from everyone.

This continuity of ideas and of men is a subject of fascination. The torch of knowledge that one carries in his time was lighted by generations that have gone before. The atom bomb, for example, was not created in the desert of New Mexico but sprang from the equations of Einstein, the discoveries of Rutherford and Becquerel who are in debt to other men who went before them. The antibiotics came from Fleming and Flory down through a stream of history that included Pasteur, Leeuwenhoek, and those who preceded them. Our current technical skills in dentistry may carry names of men who are now living but they received the seed from Black, Taggart, and others.

Knowledge is forever growing. It is a thing becoming, never become. Even the genius is in the debt of others although he may be hard pressed to acknowledge his indebtedness. A fine example of passing the torch from generation to generation and from one man to another came to my attention not many weeks ago.

One of the most active seminarians in the annual Midwest Seminar of Dental Medicine is a dentist who graduated 54 years ago and who has covered himself with fame over the years. He has made valuable contributions to the histology of dental tissues, he is one of the first orthodontists in the United States, he has been a college teacher and dean. He is the son of an eminent dental teacher and the father of a dental college dean. His name is known throughout our dental world: Frederick Bogue Noyes.

In the serious deliberations of the seminar, and in the lighter social ones, Doctor Noyes took a vigorous part. Among the seminarians, many young enough to be his sons and a few his grandsons, Frederick Noyes was an inspiration in the clearest sense of the word. Out of his vast experience, from the depths of his profound scholarship he entered his thoughts into the discussions. But he, too, was there to learn and listened as intently as the rest to the teachers. So many who are as secure in their fame are indifferent or intolerant to the knowledge of others.

For more than 25 years I have enjoyed the friendship of Frederick Noyes and during the recent seminar on dental medicine I was supremely happy to be in his presence. He and I had our little nips and cigars together when the work of the day was over. We sat in the autumn gloaming and he told me of his first meeting with G. V. Black which left a lifelong imprint on him. When Frederick Noyes was 16 and G. V. Black was fatigued from his labors, Edmund Noyes, the father, arranged a camping and fishing trip for the boy and Black. For two weeks they lived together and G. V. Black, filled with mature wisdom and competence of knowledge, inspired the boy. Around the campfire the boy and man met without the encumbrance of the crowd. Black was a biologic scientist who pioneered in the relatively new field of dental science. He was a naturalist, intim-

ately familiar with the life of all growing things around him; a lover of the clouds, the stars, the trees. Out of this association there developed an ambition of emulation on the part of the boy. Frederick Noyes became a dentist with his roots deep in the sciences and arts. He was a laboratory worker who saw living tissues but considered them not apart from living human beings. He carried to orthodontics the sensitivity of the artist who saw human faces in balance and beautiful symmetry. He conceived orthodontic treatment as a challenge to restore human faces to form and function, not merely as a mechanical procedure. He indoctrinated other men to these same ideals. As a teacher and a dean he carried these visions to thousands of young men who went forth into the world to treat dental patients as complete human beings.

No one who ever enjoyed the close friendship of Frederick Noyes has heard him boast of his own accomplishments, many as they are. At the seminar no one heard him in tiresome reminiscence in which so many older men indulge. For all of us who become smug and satisfied with our little world, Frederick Noyes is a source of stimulation.

I began to write this column to suggest that ideas have continuity and to try to say that all of us owe a debt to our predecessors and our contemporaries. I should like to add—and to our successors. We have not paid our social debt until we have garnered something and put it into place of use for those who follow us. Our contribution may be humble and relatively unimportant, but we must make it even if it is as unspectacular as the widow's mite. What may seem trivial today may be the source from which great future knowledge springs.

Over the years I have been impressed with the spirit of unselfishness that surrounds the men who are making their contributions to dentistry. Almost to a man they share willingly with their colleagues. I have known dentists who have expended their energies, their time, and their money to perfect a procedure, then give it without consideration of profit to their colleagues. The spirit of sharing

Candy
MORE THAN JUST FOOD

Although candies are an excellent source of caloric food energy, and supply many valuable nutrients derived from the milk, cream, butter, nuts, peanuts, and eggs used in their manufacture, they provide more than calories and nutrients.

Candies make a worth-while contribution to the joy of living. They are among the foods which provide true gustatory satisfaction. Taken at the end of a meal, they create a sense of having eaten well and are conducive to an aura of satiety which can have a beneficial influence upon the digestive processes.

The child, the housewife, the worker, and the convalescent—all appreciate a piece or two of candy as the finishing touch of the mid-day or evening meal.

Council on Candy

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is not an accident. It is unknown in the market-place. It comes from indoctrination in the professional tradition. God help the world if every discovery in dentistry, and in the medical arts and sciences generally, was surrounded by patents, copyrights, and royalties.

Dentists and physicians are certainly no better than other men. They have the same weaknesses of the flesh and of the spirit. What sets them apart is an *esprit de corps* that makes them want to make some contribution to their own time and to the future. In their own lives they see a continuity: the torch of knowledge handed down from one generation to another, from the master to the pupil, from the preceptor to the student, from the craftsman to the apprentice. This spirit is quite different from the transmission of wealth and possessions. The businessman, the trade unionist, the farmer may be anxious to hand down material things and property and then only to their natural heirs. The professional man—G. V. Black and Frederick Noyes as examples—bequeaths this knowledge to those unrelated to him by the accident of birth. To all who will listen he gives his contributions freely. The worldly estates of men of science are matters of little concern except perhaps to their immediate families; their greatest wealth is not measurable in the files of probate courts or in inheritance tax payments. The contributions they make to their profession, and thus to mankind, represent a wealth that cannot be destroyed.

— E. J. R.

Anthropometry

Every person is endowed by his parents with certain anatomic, physiologic, immunologic, and psychologic material which predetermine the course of his health and his physical and psychologic reactions to environment.

Sheldon, Stevens, and Tucker,[1] by means of standardized side, front, and back photographic views of persons, devised a classification of somatotypes based on three body types:

(a) Endomorphy; the person with a soft, round, large body, a large protuberant abdomen, and a small thorax, in whom the endodermal elements are fully developed.

(b) Mesomorphy; the muscular, broad-chested, strong person with thick well-developed bones and muscles of the arms and legs.

(c) Ectomorphy; the poorly developed, long, thin person, with receding chin and forehead, thin face, and narrow chest. Further classifications into distinct morphologic groups are obtained by direct measurements from the photograph.

The Navy offers a fertile field for the student interested in anthropometry. A thorough and careful study of somatotypes may bring out factors of great importance in the selection of personnel best fitted for

[1]Sheldon, W. H.; Stevens, S. S.; and Tucker, W. B.: The Varieties of Human Physique: An Introduction to Constitutional Psychology, New York, Harper & Brothers, 1940.

duty in various branches of the armed forces.

Inquisitiveness and a desire to understand natural phenomena are the factors underlying the basis for many scientific achievements; and research is the studious inquiry or examination, which has as its aim the discovery of facts and their correct interpretation.

Naval medical officers have an unlimited opportunity for such research. A study of somatotypes and appropriate follow-up with relation to the incidence of disease or behavior patterns may be of far-reaching interest and value. To carry on such investigation requires only an interest and enthusiasm in the subject, a penchant for work, and a few items of equipment.

From Editorials, *Naval Medical Bulletin* **49**:795-796 (July-August) 1949.

Advertising Index

In your ORAL HYGIENE this month

British dentist describes dental conditions under National Health Service.

BY J. L. KARP, M.D., D.M.D.

Giving a complete scale of fees (translated to dollars and cents for ease of comparison), Doctor J. L. Karp, a British dentist, tells how National Health Service affects the dentist's income. It also affects his professional viewpoint. Despite the fact that fees for conservative treatment are relatively higher than those for extractions or dentures, "blood and vulcanite" is more or less the order of the day, and even extremely young people are wearing dentures. Doctor Karp explains that "Nobody can blame a busy dentist if he prefers quick and straight service, taking less time for complicated dentistry, in his understandable wish to serve as many patients as possible in as short a time as possible. He may even forego a greater income by doing so."

★ ★ ★

Who should educate the dental patient? . . . *Not* the dentist who is earning his living at dentistry, says Doctor David Tabak. It's too easy for the patient to dismiss sound advice as "sales talk." He recommends other "teachers" in his article.

★ ★ ★

The greatest all-round marksman in the world is a dentist, Doctor Emmet O. Swanson of Minneapolis, Minnesota. His story was written especially for Oral Hygiene by William Tallant Bryan, who has been teamed with Doctor Swanson in many championship rifle matches.

★ ★ ★

"There's a double edge to humor and its sharper edge is ridicule." Charles P. Fitzpatrick asks dentists to join in protesting the publishing of cartoons or humorous articles that ridicule the dentist and grossly exaggerate the discomfort of dental treatment. These travesties can do very great harm by subtly influencing the public's conception of dentistry.

★ ★ ★

Better tear out the pictures of "Sinbad," the little gorilla who had a tooth removed. Your child patients will enjoy the two pages of photographs taken at the Lincoln Park Zoo in Chicago.

★ ★ ★

Don't forget the regular departments scattered through the magazine.